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ABSTRACT

A multitude of public policy issues currently surround the tax treatment of employee benefits, particularly since the tax-favored status of employer contributions to pensions and health insurance has been blamed for a shrinking tax base that has exacerbated the federal budget deficit, an inefficient and bloated health-care sector, overinsurance by many recipients of employer-provided health insurance, rising health care costs, and a tax system made more regressive because those who receive tax-favored employee benefits tend to be in higher-income households than those who do not. A relatively low cap on health insurance contributions--perhaps at an employer contribution of $1,125 annually--would improve efficiency and has at least five points in its favor: (1) it partially addresses the problems of rising health care, overuse of the system, and an inefficiently large health-care sector; (2) it addresses the concern that the tax base will continue to be eroded as health care costs rise and as employer contributions increase; (3) it would not limit or reduce access to basic health care by currently or potentially insurable workers; (4) it would imply an improvement in the equity of the tax system; and (5) it would not foreclose the option of mandating health insurance benefits. (The document contains 85 references, 11 tables, 1 figure, and appendices that discuss data problems in research on employee benefits and review recent studies of the tax treatment of employee benefits.) (CML)

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39. CURRENT ECONOMIC ISSUES IN EMPLOYEE BENEFITS

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I. Introduction

For at least three reasons, employee benefits have become a central issue in employee compensation in recent years, rivaling wage levels and wage changes as a topic of research and policy debate. First, employee benefits constitute a far greater proportion of total compensation today than at the end of World War II. This remains true even though, as will be shown, the growth of employee benefits as a proportion of compensation has slowed in the 1980s. Understanding the reasons for the growth or lack of growth of employee benefits is clearly important to a general understanding of worker compensation. Second, the significance of the two private employee benefits on which dollar expenditures are largest--pensions and health insurance--has been enhanced by an increasing recognition that both are in part public goods. Both retirement income and health care in the U.S. are provided by a dual public-private system in which the private components play a pivotal role. Third, in recognition of the public-goods aspects of pensions and health insurance, those benefits have been subject to an increasing number of regulations and special tax provisions during the past two decades. How these influences have altered the provision of employee benefits has been the subject of considerable research, although many questions remain.

This paper offers a treatment of the economic issues surrounding employee benefits. Although it would be impossible to offer a thorough treatment of all the issues encompassed by employee benefits in a short piece, the attempt is to touch on the important issues, and to point in appropriate directions when fuller treatment is not given.

The plan of the paper is as follows. Section II discusses recent trends in employee benefits, and attempts to place employee benefits in the context of nonwage labor costs generally. Section II also includes a discussion of employee benefit coverage and how coverage is related to various worker characteristics. An important goal of Section II is to answer questions about who is covered by what benefits, and why.

Section III describes what recent research has found regarding recent trends in voluntary employee benefits, and the reasons for those trends. Although further research on this topic is necessary, existing evidence suggests that changes in real income and marginal tax rates go a long way toward explaining trends in the provision of private pensions and health insurance.

Section IV is an attempt to develop guidelines and norms for evaluating changes in the tax treatment and regulation of employee benefits. Static economic efficiency, capital accumulation and economic growth, and issues of equity and income distribution are all considered.

Section V describes some recently completed estimates of how changing the tax treatment of employee benefits would alter compensation, federal revenues, and income distribution. The estimates presented are intended to contribute to the following questions. Should employer contributions to employee benefit plans be taxed as income, or

should the current policy of favorable tax treatment be continued? If employer contributions are taxed, should contributions to all types of plans be taxed, or only contributions to some, such as health insurance? If employer contributions are taxed, should all contributions be taxed, or only contributions above certain limits or caps?

Section VI offers a discussion of several additional topics that are important to pensions and health insurance, and that have figured prominently in recent policy discussions: the regulation and restructuring of pension plans, health-care cost containment, retiree health insurance, and regulation of health insurance (Section 89). The main conclusion of this section is that we have only a sketchy understanding of how regulation has altered the kinds of pension and health insurance plans provided by employers, and of how further changes in regulation might alter pension and health insurance plans in desirable ways.

Section VII briefly explores flexible benefit plans (also known as cafeteria plans), and the issue of dependent care (child care), both of which have received much attention lately.

Section VIII discusses policy options and makes some recommendations. The recommendations focus on whether the tax treatment or regulation of the two employee benefits that account for over 90 percent of all voluntary employer-provided employee benefits--pensions and health insurance--should be changed. The focus on tax treatment and regulation seems appropriate because the key features of current policy toward employee benefits are: (a) the exclusion of employer contributions to employee benefit plans (and investment earnings on

accumulated assets) from the federal personal income tax and from payroll taxes,[1] (b) the regulation, through ERISA (the Employee Retirement Income Security Act, as amended) and the tax code, of private pensions, and (c) the regulation, through ERISA and the tax code, of private health insurance plans.

The paper also includes two appendixes. Appendix A discusses various data problems that have plagued those who have done research on employee benefits. Appendix B offers a brief review of recent studies of the tax treatment of employee benefits.

II. Employee Benefits: Trends and Coverage

The growth of employee benefits in the years following World War II has caught the attention of economists and policy makers for at least three reasons. First, as the proportion of compensation paid as employee benefits grew, the proportion of all compensation paid as wages and taxed under the federal income tax declined (Chen 1981; Munnell 1984). Second, the growth of employee benefits had implications for employment costs, mobility, turnover, and the organization of production--for example, whether part-time and full-time workers would be employed (Hart 1984). Third, as several economists have argued, the growth of employee benefits reflected misallocated resources and reduced economic welfare, because tax subsidies for employee benefits led to greater than optimal provision of employee benefits (see, for example, Feldstein 1977; Feldstein and Friedman 1977).

A. Employee Benefits in the Context of Labor Costs

It is useful to place employee benefits in the context of other costs of employing labor.[2] Table 1 displays data on all nonwage labor costs (NWLCs) as a proportion of total labor costs for U.S. private domestic industries in 1965 (or 1966) and 1985. NWLCs are broken down into six groups: payments for time not worked (row a), statutory social welfare costs (row c), voluntary social welfare costs (row d), benefits in-kind (row e), other expenses of a social nature (row f), and vocational training (row g). Total social welfare costs--the sum of rows c and d--are shown in row b, and total NWLCs are shown in row h. The U.S. National Income and Product Accounts provide data only on statutory and voluntary welfare costs (rows b, c, and d--see the Appendix on data problems).[3]

Row h of Table 1 suggests that NWLCs have grown dramatically during the last 20 years in the U.S. Defining NWLCs as contributions to social welfare programs (see the column headed "National Income and Product Accounts"), NWLCs have grown from just under 10 percent of total labor cost in 1966 to about 16 percent in the mid 1980s. Defining NWLCs more broadly to include payments for days not worked, benefits in-kind, other social expenses, and vocational training (see column headed "Chamber of Commerce"), NWLCs have grown from just under 20 percent of total labor costs in 1965 to over 27 percent in 1985.

Although row h of Table 1 shows that NWLCs as a whole have grown significantly during the past 20 years, other rows of Table 1 reveal that not all components of NWLCs have increased. Chamber of Commerce data not shown in Table 1 suggest that, although payments for days not

worked grew as a proportion of total labor costs during the 1970s, during 1982 through 1985 they returned to roughly the same level as during the late 1960s (see row a). Benefits in-kind actually fell as a proportion of total labor costs during the 20-year period (row e). Other social expenses grew insignificantly (row f), and vocational training remained a minuscule proportion of total labor costs (row g).

The conclusion is that the growth of NWLCs during the 1965-1985 period can be attributed almost entirely to the growth of statutory and voluntary employer contributions to social welfare plans (see rows c and d).

Table 2 shows more detailed statistics on the mix of compensation in the U.S. during 1968 through 1986. The statistics are derived from the National Income and Product Accounts (U.S. Department of Commerce 1986, 1987), and divide compensation into three parts--wages and salaries, legally required nonwages (mainly Social Security, Unemployment Insurance, and Workers' Compensation, which were referred to as statutory social welfare costs in Table 1), and voluntary nonwages (mainly private pensions and health insurance, which were referred to as voluntary social welfare costs in Table 1).[4]

The annual percentage change figures suggest that, over the past 20 years, the pattern of growth of legally required nonwages has been more even than that of voluntary nonwages. The data indicate that legally required nonwages grew (as a proportion of total compensation) at an annual rate of 3.1 percent from 1968 to 1975, at an annual rate of 2.5 percent from 1975 to 1980, and at an annual rate of 1.6 percent from 1980 to 1985. This slight deceleration of growth does mask some changes

within the package of statutory social welfare costs: Contributions to social security (OASDHI) grew slowly during the late 1970s, but have grown rapidly since the 1983 reform of the social security financing system. (These data are not shown in the table.) Workers' Compensation grew rapidly during the 1970s, only to decline as a proportion of total labor costs in the 1980s. (Again, these data are not shown in the table.) Nevertheless, the slowdown of the growth of statutory social welfare costs is not dramatic.

In contrast, the growth of voluntary nonwages slowed dramatically and plateaued during the 20 year period, as can be seen in row d of Table 1. The data show that voluntary nonwages grew rapidly between 1968 and 1975--at an annual rate of 5.9 percent. But voluntary nonwages grew less rapidly during the late 1970s (at an annual rate of 3.1 percent). Moreover, voluntary nonwages fell at an annual rate of 1.2 percent between 1980 and 1985.

B. Disaggregations by Industry

Table 3 displays NWLCs as a proportion of total labor costs in five years, desegregated by industry. These industry disaggregations are based on the National Income and Product Accounts. Each proportion shown is simply the sum of Employer Contributions to Social Insurance (Accounts Table 6.12) and Other Labor Income (Table 6.13) divided by Compensation (Table 6.4).

Table 3 indicates much interindustry variation in the incidence of NWLCs. Moreover, the pattern of interindustry variation changed over the 20 year period in question. In 1966, communications and utilities

had the largest proportion of NWLCs (roughly 13 to 15.5 percent), whereas agriculture, services, the trade sector, and construction had the lowest (6 to 8 percent). By 1985, this pattern had changed somewhat: construction experienced an explosion of NWLCs, and had a proportion of NWLCs similar to manufacturing. Also, NWLCs in finance, insurance, and real estate had lost ground in relative terms, so that the financial sector had NWLCs at roughly the economy-wide average. These interindustry patterns are treated further in section I.D below, when their relationships to skill and overtime hours are discussed.

C. Estimates of Fixed and Variable Labor Costs

Table 4 displays estimates of the percentage of total labor costs that are fixed NWLCs, and of the fixed/variable labor cost ratio.[5] A comparison of Table 4 with Table 3 suggests that the growth of fixed NWLCs, both in aggregate and by industry, has been similar to that of NWLCs generally. That is, NWLCs as a proportion of total labor cost and the fixed/variable labor cost ratio both grew by 66 percent between 1966 and 1985. Also, the growth of NWLCs in an industry is mirrored in the growth of the fixed/variable labor cost ratio in the same industry with only two notable exceptions--construction, where NWLCs grew by 118 percent while the fixed/variable labor cost ratio grew by 179 percent, and wholesale trade, where NWLCs grew by 78 percent while the fixed/variable labor cost ratio grew by 105 percent.

D. Fixed Labor Costs, Skill Levels, and Overtime Hours

Table 5 attempts to show the relationships between fixed labor costs and skill levels. The Table repeats the 1985 data on fixed/variable cost ratios from Table 4, and adds data on skill levels by industry. The variable used to proxy skill level is real capital consumption allowance per full-time equivalent worker. This variable has been used frequently to approximate firm-specific human capital, for the reason that it measures real capital use per worker, which in turn is believed to be related to the amount of firm-specific skills possessed by workers (Long and Scott, 1982). The Spearman rank correlation coefficient between the fixed/variable cost ratio and the skill proxy is 0.88, suggesting that industries that use highly skilled labor also face (or voluntarily take on) relatively high fixed labor costs.

Data not presented here suggest that fixed/variable cost ratio is also related to average overtime hours in an industry (Hart and others 1988), although the relationship is weaker than that between the fixed/variable cost ratio and skill. Nevertheless, the evidence suggests that industries facing high fixed labor costs tend to make greater use of overtime, rather than add workers to their payrolls. In that the relationship between fixed labor costs and skill appears stronger that between fixed labor costs and overtime hours, the figures accord with Hart's findings for U.K. manufacturing (Hart, 1984, Table 2.9).

E. Employee Benefit Coverage and Worker Characteristics

The discussion to this point has been mute regarding how employee benefits are distributed among individual workers. Clearly, given the public interest in retirement income and access to health care, it is important to understand at a micro level the extent to which workers are covered in employer-provided pension and health insurance plans, and further to know the characteristics of those workers who are covered.

In addressing questions of pension and health insurance coverage, it is possible to rely on the March 1988 Current Population Survey, which includes responses to a series of questions about the inclusion of workers in employer-provided pension and health insurance plans. Regarding pensions, the survey questions of main interest are, "Other than Social Security did any employer or union that you worked for in 1987 have a pension or other type of retirement plan for any of its employees?" and "Were you included in that plan?" Regarding private health insurance, the questions of interest concern whether a worker was covered by a health insurance plan, whether that plan was in the worker's name, whether the plan was provided through a current or former employer or union, and whether the employer or union paid all, part, or none of the cost of the plan. Note that we are concerned here only about a worker's inclusion in an employer-provided pension or health insurance plan. Whether a plan covers others in the household and whether a member of a household is covered by someone else's plan are distinct issues not considered here.

Table 6 displays data on the distribution of employer-provided pensions and health insurance among workers aged 18 or older who were

not in the military and had positive earnings in 1987. The first row of the table shows that about 43 percent of these workers were included in an employer-provided pension plan, whereas nearly 60 percent were included in a group health plan. Of those included in a group health plan, about two-fifths (24.1/59.9) were in plans that were fully paid for by the employer. Finally, 37.5 percent of these workers were covered by both pension and group health plans.

Additional figures in Table 6 show that there is much variation among workers in pension and health insurance coverage: Female workers are less likely to be covered than male workers; young workers are less likely to be covered than old (except for those 65 and over); Hispanics are less likely to be covered than other workers; workers with lower educational attainment are less likely to be covered; nonunionized workers are less likely to be covered than unionized workers; part-time workers are less likely to be covered than full-time workers; the self-employed are less likely to be covered; and those with lower earnings are less likely to be covered than those with higher earnings. These coverage patterns hold for both pension and group-health provision.

There are also sharp differences in pension and health insurance provision among industries. Public administration, transportation, communications, utilities, and manufacturing all have relatively high percentages of workers covered by both pension and group health plans. Agriculture, services (other than professional), and retail trade have relatively low percentages of covered workers. Industries that have relatively high pension coverage also tend to have relatively high

health insurance coverage: the Spearman rank correlation coefficient between industry pension and group health coverage is 0.96.

The variation in employee benefit coverage across occupations is far less striking than the variation across industries. Managers and professional/technical workers do have relatively high coverage by pension and group health plans. Sales workers, service workers, and laborers have relatively low coverage. But the differential between the best-covered and worst-covered occupations is far smaller than that between the best- and worst-covered industries.

Although the means displayed in Table 6 offer a picture of the distributional pattern of employee benefits, they provide little insight into the reasons for that pattern. For example, it is clear that female workers are less likely than male workers to be included in employer-provided pension or health insurance plans, but it is unclear whether this differential should be attributed purely to gender, or whether it is partly due to the part-time/full-time status, industry of employment, or occupation of women. A rough attempt to explain the pattern of worker coverage in pension and health insurance plans is offered in Table 7, which displays the results of estimating four linear probability models: one each for inclusion in a pension plan, inclusion in a group health insurance plan, inclusion in a group health plan that was wholly employer-paid, and inclusion in both a pension plan and a group health plan.

Each of the linear probability models in Table 7 is estimated by regressing a zero-one dummy variable (for example, 1 = included in a pension plan; zero = excluded) on explanatory variables capturing

gender, age, ethnicity, education, union coverage, part-time/full-time status, self-employment status, annual earnings, industry, occupation, and household status. The interpretation of the coefficients is straightforward: Each shows the change in the probability of being included in a benefit plan (that is, the probability that the dependent variable equals one) associated with a unit increase in the independent variable. (Note that a maximum likelihood method such as logit or probit is appropriate when, as here, the dependent variable is zero-one. Accordingly, these estimates should be considered exploratory only.)

Consider the coefficient of the female variable in the pension equation (0.022). The inference is that, other things equal, female workers are about 2 percent more likely to be included in an employer-provided pension plan than are male workers. This is somewhat surprising in view of the large negative differential between female and male workers in pension coverage seen in Table 6. It appears that variables such as part-time status, union coverage, earnings, industry, and occupation explain much of the difference between female and male workers in pension coverage. (Results not displayed in Table 7 show that the coefficient of the female variable is positive even without controlling for industry, occupation, and household status.)

Several variables appear strongly associated with large changes in the probability of being covered by pension and group health plans. Workers aged 35-64 have a probability of pension coverage that is higher by 0.13 than workers aged 18-24. Part-time and self-employed workers have far lower probabilities of being covered by pension or health insurance, other things equal. Also, the probability of benefit

coverage increases markedly as annual earnings increase up to $30,000. But there is no change in the probability of benefit coverage as earnings increase beyond $30,000.

Industry of employment is strongly related to probability of benefit coverage. Employment in manufacturing, transportation, communications, and public utilities, and especially in public administration, sharply increases the probability of being covered by a pension or group health plan. On the other hand, occupation has a much weaker association with the probability of benefit coverage than does industry of employment.

A striking and surprising result shown in Table 7 pertains to union coverage. Although union coverage increases the probability of inclusion in a pension plan by over 11 percent, it is unrelated to inclusion in a health insurance plan.

Other variables are associated only weakly with the probability of benefit coverage. As already noted, and surprisingly, differences between female and male workers are quite small once other variables are controlled for. Finally, ethnicity and household status play only minor roles in employee benefit coverage, according to the estimates in Table 7.

The estimates displayed in Table 7, although they provide some insight into the reasons for employee benefit provision, tell us nothing about whether changes have occurred in the pattern of benefit provision over time. Neither do they tell us why changes in the pattern of employee benefit provision might take place. In future research, high

priority should be given to analyzing both the existence and causes of changes in the pattern of employee benefit provision.

III. Explaining the Pattern of Growth of Pensions and Health Insurance

Table 2 illustrated that voluntary nonwages, which are mainly the costs of pensions and health insurance, grew at an annual rate of about 6 percent 1968 and 1975, at an annual rate of roughly 3 percent during the late 1970s, and actually declined at a rate of about 1 percent from 1980 through 1986. This slowing growth of pensions and health insurance requires an explanation.

Unfortunately, there is less certainty about the causes of the pattern of growth of voluntary employee benefits than there is about the pattern itself. The litany of reasons for the provision of voluntary employee benefits includes: (a) preferential treatment under the federal personal income tax code; (b) rising real incomes; (c) economies of scale in the provision of pensions and health insurance (Mitchell and Andrews 1981); (d) efforts to improve workers' productivity and reduce turnover by deferring payment of benefits (Logue 1979; Lazear 1981); (e) unionization (Freeman 1981; Alpert 1982); (f) changing demographic composition of the labor force; (g) workers' preferences and desires; (h) capital gains and losses to pension funds resulting from changing asset prices (Munnell 1987); and (i) changing social norms. [Good general discussions of these factors include Rice (1966a, 1966b), Lester (1967), and Long and Scott (1982)].

To what degree can each of these factors explain the pattern of growth of employee benefits? Although several studies have found evidence that unions and collective bargaining exert a positive independent effect on the provision of nonwage benefits (Freeman 1981; Alpert 1982; Rossiter and Taylor 1982; Fosu 1984; and Mincer 1983), the stagnation of private-sector union growth since the 1950s makes unionism a rather unpromising source of significant changes in employee benefit provision.[6] Similarly, it is unclear that the "technology" of benefit provision has changed so that scale economies of benefit provision now exist where they did not before (Mitchell and Andrews 1981).

Both theoretical and empirical work suggests strongly that deferral of income reduces labor turnover, and by inference, improves productivity (Logue 1979; Schiller and Weiss 1979; Lazear 1981; Wolf and Levy 1984). But again, it is unclear that the desire to reduce turnover has been a driving force behind changes in the pattern of provision of employee benefits. The only existing study of this question, by Mumy and Manson (1985), concludes that considerations of productivity and turnover are far less potent explanators of pension growth than is the tax treatment of pension contributions. Indeed, recent restructuring of pension plans--that is, the movement away from defined-benefit plans and toward defined-contribution plans--tends to corroborate Mumy and Manson's findings.

The most likely causes of changes in the growth of employee benefits, then, are the changing composition and aging of the labor force, changes in the tax treatment of benefits, and changes in real incomes. Several early studies of employee benefit provision

concentrated on the growth of pensions and health insurance, since up until 1980 growth (not slowing growth or stagnation) was the pattern that required explanation. In particular, most of these studies (see Appendix B) pointed to increases in the marginal tax rate on earned income as the main explanator of employee benefit growth, and gave correspondingly short shrift to changing real incomes and the aging of the labor force.

The present discussion will rely on a recent study by Woodbury and Huang (1988), which attempts to separate the effects of income and favorable tax treatment by using a pooled time-series of industry cross-sections from the National Income and Product Accounts. Huang and I estimate a model of the demand for employee benefits that indicates how responsive the employee benefit share of compensation is to changes in the marginal tax rate on wages (that is, to the tax-price of employee benefits), changes in real income (or real total compensation), and other variables. These other variables include demographic characteristics of the workforce such as age and gender, whether the work performed by employees was production or nonproduction, average establishment size, the capital-labor ratio (as a proxy for firm-specific human capital), and the annual percentage change in output.

Two findings are central to our explanation of changes in the employee benefit share of compensation during the 1969-1986 period. First, in accord with the results of several earlier studies, we find that employee benefits and wages are good substitutes for each other. Hence, when the marginal tax rate on wages goes up, workers demand a

greater share of their compensation as employee benefits, which are untaxed at the time of receipt. And second, we find that the demand for employee benefits is income elastic, whereas the demand for wages is income inelastic. Hence, when real incomes rise, workers demand a greater share of their compensation as employee benefits. This latter finding differs from the early studies, most of which found the effects of income on employee benefits to be small, had difficulty separating income effects from tax-price effects, or ignored income effects altogether.[7]

Figure 1 summarizes our findings graphically. The line with squares and labeled "Actual" shows the actual employee benefit share in each year from 1970 to 1986; the line with diamonds and labeled "Tax-Price Effect Only" shows the employee benefit share simulated by allowing marginal tax rates to take their actual value in each year, but holding all else constant; and the line with X's and labeled "Income Effect Only" shows the employee benefit share simulated by allowing real income to take its actual value in each year, but holding all else constant.

In addition, Figure 1 shows the predicted (or forecast) employee benefit share (see the line with +'s and labeled "Predicted"). This predicted share is obtained by substituting current year values of all independent variables into our estimating equation, and solving for the employee benefit share. Finally, Figure 1 shows the employee benefit share simulated by allowing both marginal tax rates and real income to take their actual values in each year, but holding all else constant

(see the line with triangles and labeled "Both Tax-Price and Income Effects").

What we find is that changes in the tax-price of benefits relative to wages explain about half of the change in the employee-benefit share that occurred between 1970 and each year from 1972 through 1986. Moreover, the downturn in the employee benefit share that started after 1982 is predicted well by the increase in the tax-price of employee benefits (decrease in marginal tax rates) that started after 1981. This increase in the tax-price of employee benefits is a clear result of successive revisions to the federal income tax during the 1980s that have cut the marginal tax rate on income.[8]

Other variables also play an important role in explaining changes in the employee benefit share, albeit a less important role than the changing tax-price of benefits. Consider, for example, real income changes. It is easy to see from Figure 1 that from 1977 through 1981, falling real income damped the growth of the employee benefit share. This suggests in turn that decreases in real income during the late-1970s contributed to the slowing growth of employee benefits during the late-1970s. The role of the demographic variables, the capital-labor ratio, and additional variables included in our model are not shown in Figure 1. Our findings suggest that these factors also play a role in explaining changes in the employee benefit share, but none plays as strong a role as either the tax-price or income variables.[9]

Our model, and simulations based on that model, suggest that changes in two variables--the tax-price of employee benefits and real

income--explain most of the rapid growth of employee benefits up to the mid-1970s, the slowing growth that occurred between 1976 and 1981, and decline that has occurred since. The marginal tax rate on wages rose (and the tax-price of employee benefits) fell throughout the 1970s, favoring provision of employee benefits. But average real income peaked in 1972, showed little change through 1976, and then fell through 1981. It follows that changes in both the tax-price of employee benefits and real income favored employee benefit growth in the early 1970s. But during the late-1970s, only changes in the tax-price of employee benefits favored employee benefit growth, whereas the decline in real income damped that growth. In the 1980s, neither changes in the tax-price of employee benefits nor real income have favored employee benefits--the tax-price of employee benefits has risen with repeated cuts in marginal tax rates, and real income growth has been modest. Hence, the demand for ever more employee benefits has dampened, and the actual growth of the employee benefit share has ceased.

IV. A Framework for Evaluating Employee Benefits Policy

The discussion to this point leaves unanswered questions about what might be the appropriate role of government policy regarding employee benefits. This section sets out some possible criteria for evaluating public policy toward employee benefits, treating them under three broad headings: (a) static economic efficiency, (b) capital accumulation and economic growth, and (c) equity and income distribution. These three sets of criteria are considered in turn.

A. Static Economic Efficiency

Static economic efficiency--the allocation of resources to their most highly valued use--has been often used as an argument for taxing employer contributions to pensions and health insurance. Indeed, the favorable tax treatment of employer contributions to voluntary employee benefit plans has been under attack since at least 1973, when Martin Feldstein argued that the exclusion of health insurance contributions from taxable income distorts the incentive to demand health insurance and ultimately to use the health care system. Feldstein and those who have followed him have made two points. First, they argue that the tax-favored status of health insurance is responsible for the rising cost of medical care: "the tax laws give an incentive to purchase more health insurance, and...health insurance encourages consumers to purchase more medical care than they would in the absence health insurance" (Vogel 1980, p. 220). Second, they have argued that a tax subsidy for health insurance is inefficient--the government could provide the same amount of health care directly, finance the health care through lump-sum taxes, and have revenue left over that could be returned to taxpayers or used to buy other public goods or services.[10]

Mark Pauly (1986) has recently challenged those who advocate taxing health benefit contributions, arguing that the efficiency effects of removing the tax-favored status of health insurance are ambiguous. The ambiguity arises because the health care market is so imperfect. Even in the absence of tax-subsidies, the health care sector would never be perfectly competitive. Moreover, there are externalities associated with health care provision, and the market for health insurance is

plagued by adverse selection. In such a case, the theory of second best suggests that removing a distortion may not be welfare improving.

In other words, it is important not to define any and all departures from a market-determined allocation of resources as inefficient. If the distribution of endowments or opportunities is considered undesirable, if externalities in the consumption of some good exist, or if market structure is imperfect, then the market mechanism may fail to achieve static efficiency.

Another factor that could offset the alleged inefficiency of giving employee benefits favorable tax treatment is the flexibility the current system provides employers in structuring benefit plans. This flexibility may be desirable if it leads to a more efficient allocation of the labor force (that is, to better matches between workers and firms), or to enhancement of on-the-job effort (that is, to less shirking). Deferred benefits, such as pensions, have been theorized to be an efficient mechanism for inducing worker attachment, commitment, and the accumulation of firm-specific human capital (Lazear 1981; Shapiro and Stiglitz 1984; Bell and Hart 1988.) Clearly, such considerations need to be evaluated and made part of any overall evaluation of employee-benefit policy.

B. Capital Accumulation and Economic Growth

Whether a policy contributes to or inhibits capital accumulation and long-run economic growth is a second consideration that requires evaluation. The criterion here is long-run efficiency, which cannot be captured by the notion of static efficiency discussed above.

In the context of employee benefits, questions of capital accumulation and economic growth bear mainly on policies that might influence pensions. Much controversy has surrounded the question of whether pensions result in net additions to saving, or alternatively merely replace saving that individuals would engage in on their own if they were not pension participants. Pensions would result in net additions to saving if pensions and private asset holdings were complements, which would be the case if pension eligibility led individuals to plan earlier and longer retirements than they otherwise would (the additional assets would be needed to finance a longer retirement). Alternatively, pensions would simply substitute for private asset holdings if pension eligibility had no impact on an individual's retirement behavior (the pension assets would be used in place of other assets to finance a retirement of predetermined duration).

Individual Retirement Accounts (IRAs) have sparked similar concerns about saving behavior: Do (or did) IRAs simply substitute for saving that individuals would have engaged in anyway, or do they result in net increases in saving and private asset holdings? The issues are important because if pensions or IRAs do generate net additional saving, and saving in turn generates funds that are available for lending and investment, then pensions and IRAs contribute to long-run growth.

Pozo and Woodbury (1986) have reviewed the evidence on whether pensions result in net additions to asset accumulation, and offer additional evidence using the 1983 Survey of Consumer Finances (SCF). We find widely divergent results among the existing studies of pensions

and saving. These divergent results occur even among studies that use similar kinds of data (for example, aggregate data or household data). In our empirical work with the 1983 SCF, we find that estimates of the influence of pensions on private asset holdings are extremely sensitive to changes in specification of the estimating equation. In particular, an asset holding model that excludes current household earnings yields estimates suggesting that pensions and asset holdings are complements and that households with greater pension wealth save more. But an asset holding model that includes current household earnings yields the opposite result--that pensions and asset holdings are substitutes and that households with greater pension wealth save less. The fragility of these results suggests a need for improved data and estimating techniques in addressing questions about the influence of pensions on asset accumulation.

Similar controversy has surrounded the question of whether IRAs have induced increases or decreases in saving and asset accumulation. Here, however, the evidence seems to support the idea that much IRA saving has represented new saving (Venti and Wise 1987; Feenberg and Skinner 1989).

In short, there exists much research on how pensions and various pension policies influence saving and asset accumulation, but consensus has not yet emerged on the direction of all these influences. The development of data and estimating techniques to resolve convincingly questions surrounding pensions and saving, in particular, should be given high priority.

C. Equity and Income Distribution

1. Employee Benefit Coverage and Income Distribution. As discussed in section II above, employee benefits vary greatly across industries and individual workers. But how does the pattern of employee benefit coverage influence the distribution of income? This question has been considered by Smeeding (1983, especially Table 6.6 and 6.7), who finds that, as a whole, voluntary employer contributions to pensions and to health and life insurance tend to make the distribution of income more unequal: High-wage workers receive a larger share of their total compensation as deferred income and insurance than do low-wage workers. Smeeding's findings are supported by the findings of Taylor and Wilensky (1983) and Chollet (1984) on health benefits, and of Andrews (1985) and Kotlikoff and Smith (1983) on pensions. But Smeeding also shows that it is important to decompose nonwage compensation into health and life insurance, on the one hand, and pensions and other deferred compensation, on the other. The reason is that health and life insurance benefits are roughly proportionately distributed, whereas deferred compensation is highly regressively distributed. Specifically, Smeeding's findings indicate that insurance benefits increase from 3.7 percent of compensation for low-wage workers to 6.2 percent of compensation for a middle-wage group, but then decline to 2.9 percent for the highest-wage group. In contrast, deferred compensation is only 0.4 percent of the earnings of the lowest-wage group, but 7.2 percent of the compensation of the highest-wage group.

Legally required contributions, such as social security, unemployment insurance, and workers' compensation, differ markedly from

voluntary contributions in their effect on income distribution. Legally required contributions tend to be distributed progressively, and hence bring about greater equality.

In sum, voluntarily provided employee benefits, unlike legally mandated contributions to social insurance, seem to have a disequalizing influence of income distribution. This naturally raises questions about the desirability of exempting these benefits from federal payroll and personal income taxes.

2. Other Equity Considerations. Employee benefits such as pensions and health insurance are intended to insure workers against income loss resulting from old age and sickness. It is this "merit good" aspect of employee benefits that has long been used to justify the favorable tax treatment that employer contributions to employee benefit plans receive.

However, if a larger proportion of the total compensation of high-earning workers is received as nonwage benefits, as appears to be the case, then the exemption of those benefits from payroll and personal income taxes is clearly a regressive aspect of the U.S. tax system. That is, exemption of nonwage benefits violates the vertical equity precept that those with greater ability to pay for government services should do so. This concern has been the subject of an extensive study by the Congressional Budget Office (1987), which advocates reducing the tax advantages now associated with pensions.

In addition, exemption of nonwage benefits creates situations where horizontal inequities can--and undoubtedly do--arise. Consider two workers, each with total compensation (wages plus contributions to

health insurance, life insurance, and pensions) of $20,000. Suppose also that they are both single and declare one exemption and the zero-bracket amount. If Mutt receives $17,000 in wages, whereas Jeff receives $18,500 in wages, then Jeff pays more taxes and faces a higher marginal tax rate than Mutt. But this clearly violates the notion of horizontal equity--that households equally situated should be taxed equally.

The "pure solution" to this problem, as Munnell (1984) has called it, is to include all employer contributions for employee benefits in taxable gross income. (Increases in accrued vested pension contributions would also be included in gross income, since such increases constitute an increase in an individual's lifetime income.) The pure solution is attractive in principle because it would mitigate inequities in the tax system. It is also attractive in the sense that it would either raise federal revenues or permit federal marginal income and payroll tax rates to be lowered. For example, Munnell (1984, Table 2) estimates the revenue gain from such a comprehensive tax to be $64.3 billion. The practical difficulties of implementing this pure solution are minimal. Indeed, the problems that do exist pale beside the political opposition such a proposal would almost certainly meet. In view of the strong potential opposition to taxing employee benefit contributions, some workable alternative must be sought.

One alternative that has gained currency, and that has been introduced in a variety of guises in legislative proposals, is to limit the amount of the employer's contribution to both pensions and health insurance that is excluded from the worker's taxable gross income.

There have been numerous discussions of such proposals (Adamache and Sloan 1985; Chollet 1984; Halperin 1984; Katz and Mankiw 1985; Korczyk 1984; Steuerle and Hoffman 1979; Sullivan and Gibson 1983), and the 1986 Tax Reform did tighten limits on certain forms of retirement saving (Congressional Budget Office 1987). Limits on the tax advantages given to health insurance have only recently been imposed, although whether these limits will be effective remains unclear (see the discussion of Section 89 of the Internal Revenue Code in section VI below). It is alleged that limiting the tax-favored status of employee benefits would stem what many observers believe to be an inefficient and excessive use of the health care system. Hence, in addition to raising considerable revenues, some believe that a "tax-cap" on health benefit contributions would help correct a distortion of the price system that has led to an inflated health care sector.

The effects of these proposed policies are considered in the following section.

V. Effects of Changing Tax Policy on Employee Benefits

Woodbury and Huang (1989) have simulated the effects on compensation of three alternative changes in tax policy: (a) the 1986 tax reform; (b) treating employer contributions to health insurance as taxable income (both a policy of taxing all health-insurance contributions, and a policy of taxing only contributions over $1,125 annually); and (c) treating all employer contributions to both pensions and health insurance as taxable income. These simulations are based on

a three-equation model of the provision of wages, pensions, and health insurance.

A. Effects of Policy Changes on Compensation

Tables 8 and 9 summarize the effects of the policy changes on compensation. Table 8 shows how each of the four simulated policy changes would have altered compensation quantities (that is, real expenditures), nominal expenditures, and shares if they had been in effect during 1969 through 1982. All effects are shown in percentage terms, averaged over the 1969-1982 period. Panel A shows the total effects of the policy changes--that is, the sum of the substitution, ordinary income, and extra income effects. Panel B isolates the substitution effects of each policy change--that is, the effect of each policy if only the change in tax-price implied by each were to occur (and if money total compensation and all other determining variables were held constant).

In contrast, Table 9 shows estimates of how each policy change would affect compensation quantities, nominal expenditures, and shares if enacted today under the existing tax system. (Note that the 1986 tax reform is not shown in Table 9 because comparison of each policy change is with respect to the tax system implied by the 1986 reform.) Again, all changes are shown in percentage terms, and Panel A shows the total effects of each policy change, whereas Panel B shows the substitution effects.

1. Effects of the 1986 Tax Reform. The simulations suggest the following effects of the 1986 tax reform (see Table 8). First, and most

important, the tax reform can be expected to lead to significant increases in the quantity, nominal expenditure, and share of compensation taken as health insurance. This increase in health insurance occurs in spite of the reduced incentive to receive compensation as health insurance that results from lower marginal tax rates on wages (that is, in spite of a negative substitution effect). The increase in health insurance is attributable to the large income effects of the tax reform.

Second, the tax reform can be expected to significantly increase the quantity of compensation received as wages. The increase in wage quantities is expected in light of the reduced tax-price of wages implied by lower marginal tax rates. (Note that the share of compensation received as wages will be little affected by the tax reform due to the relatively larger increase in health insurance compensation).

Third, the 1986 tax reform will shift the mix of compensation away from pensions and toward health insurance.

The basic predictions from the simulations are that the reform will (a) increase the quantity, nominal expenditure, and share of compensation taken as health insurance, and (b) shift the mix of compensation away from pensions and toward health insurance. These predictions can be explained by noting two points. First, the demand for health insurance contributions is very inelastic, or unresponsive to changes in tax-prices. Hence, raising the tax-price of health insurance will increase the share of compensation demanded as health insurance. Second, workers are very willing to substitute back and forth between pensions and wages. That is, the demand for pensions is highly elastic,

or responsive to changes in tax-prices. It follows that raising the tax-price of pensions will reduce the share of compensation demanded as pension compensation.

The results of simulating the 1986 tax reform are troubling because they suggest that it will be difficult to bring down health insurance expenditures or the health insurance share of compensation. Indeed, because the 1986 tax reform has such large income effects, it will increase the demand for health insurance even though it has reduced the tax-price incentives to demand health insurance. Some of this increase may already be reflected in large increases in health-insurance premiums that were reported for 1989 and are being reported for 1990.

2. Effects of Taxing Health Insurance Contributions. The simulations suggest that treating all health insurance contributions as taxable income would have a strong effect on the provision of health insurance by employers. Taxing health insurance during the 1969-1982 period would have reduced the quantity of employer-provided health insurance by over 22 percent (Table 8), and taxing health insurance under the current system could be expected to reduce the quantity of employer-provided health insurance by nearly 15 percent.

Similarly, taxing health-insurance contributions in excess of $1,125 annually (in 1982 dollars) would substantially reduce the quantity of employer-provided health insurance. Such a policy during the 1969-1982 period would have reduced the quantity of health insurance by nearly 14 percent (Table 8), and doing so under the current tax system would reduce the quantity of health insurance by nearly 9 percent (Table 9).

An apparent side effect of taxing health insurance contributions would be a reduction in the quantities of wages and pension provided by employers. These decreases result because taxing health insurance would reduce real incomes, which would lead in turn to reductions in both wages and pensions. Although neither reduction would be enormous, the decrease in pension provision should be considered in any public discussion of the merits of taxing health insurance, and ways of offsetting the decrease might be considered if it were viewed as undesirable.

3. Effects of Taxing All Employee-Benefit Contributions. Our simulations imply that treating all employer contributions to pensions and health insurance as taxable income would dramatically reduce the provision of both pensions and health insurance. Indeed, taxing all employee benefits would have cut pension provision by 64 percent during the 1969-1982 period, and would cut pensions nearly in half under the current tax system. Health insurance would have been reduced by nearly 28 percent during the 1969-1982 period, and would be reduced by 20 percent under the current system. These results suggest that reforming the tax system to include employer contributions as taxable income would be politically difficult, and could create strong pressure to increase Social Security benefits to compensate for the decline in private pensions.

Wage quantities would also fall (but far less than pensions or health insurance) if all employee benefits were taxed. This small decrease results because taxing all employee benefits would reduce real disposable incomes, which would lead in turn to reduced wage quantities.

Another effect of taxing all employee benefits would be a major shift in the mix of compensation away from pensions and health insurance and toward wages. The share of compensation received as pensions would be most affected--our simulations suggest a decrease in the pensions share of nearly 40 percent.

Pensions would be reduced by half if all employee benefits were taxed, but health insurance would be cut by only 20 percent, for a simple reason: Pensions and wages are far better substitutes than are health insurance and wages. It follows that when pensions are taxed, workers are readily willing to substitute wages for pensions, but less willing to substitute wages for health insurance.

B. Distributional Effects of the Policy Changes

The distributional effects of the tax-policy changes can be seen in two ways. Table 10 shows the effect of each policy change on the tax bill of the average worker in low-wage, medium-wage, and high-wage industries. Table 11 disaggregates the total effects of each policy change on compensation quantities into effects on workers in low-wage, medium-wage, and high-wage industries.

The simulations suggest that the effects of the 1986 tax reform are roughly proportional: Both the revenue effects and the effects of the reform on compensation appear to be similar across industries.

Similarly, the distributional effects of taxing all health insurance contributions are not dramatic. Workers in low-wage industries would experience somewhat smaller decreases in wages and health insurance than workers in high-wage industries. Also, workers in

high-wage industries would experience somewhat larger increases in their income tax bills. But the differences among the three groups of workers are not great.

In contrast, the distributional effects of taxing health insurance contributions over $1,125 are significant. Under the low tax cap, workers in high-wage industries would experience a 28 percent decrease in health insurance, whereas workers in low- and medium-wage industries would experience a decrease of only 11 to 13 percent. Also, the income taxes of workers in high-wage industries would rise by over 4 percent, whereas the income taxes of other workers would rise by less than 1 percent. We conclude that a low tax cap on health insurance has distributional effects that would increase income equality.

Similarly, the simulations suggest that taxing all health insurance contributions would tend to increase income equality. Workers in low-wage industries would experience income tax increases of 14 to 15 percent, whereas workers in high-wage industries would experience tax increases of nearly 26 percent.

VI. Further Issues in Pensions and Health Insurance

The discussion of public policy as it bears on employee benefits has to this point focused on the tax treatment of pensions and health insurance. In this section, we turn to a variety of additional issues that are specific to pensions and health insurance, and that are of increasing concern to workers, employers, and the public generally: the regulation of pensions and its impacts; the problem of health-care cost

containment; the problems posed by health insurance plans that extend to retired employees; and the regulation of health insurance plans under Section 89 of the Internal Revenue Code.

A. Pension Regulation and the Restructuring of Pension Plans

Congress appears to have had two purposes in legislating the Employee Retirement Income Security Act of 1974--ERISA. The first was to improve the information available to employees about their pensions "by requiring the disclosure and reporting...of financial and other information" about retirement plans (Public Law 93-406, 88 Stat., September 2, 1974).

The second purpose of ERISA was to improve the "equitable character and soundness" of existing and future retirement benefit plans "by requiring them to vest the accrued benefits of employees with significant service, to meet minimum standards of funding, and by requiring plan termination insurance." In other words, the second goal was to provide better benefits for more workers, and to guarantee that anticipated benefits would in fact be received.

To bring about these ends ERISA established standards that must be met in order for a defined-benefit pension plan to qualify for favorable tax treatment. These standards pertain to participation, vesting, reporting and disclosure, and funding. Because compliance with these ERISA standards is costly to employers, there was discussion from the start that ERISA might lead to termination of pension plans. This would, of course, frustrate achievement of broader coverage and imply

the perverse effect of reduced coverage and lowered benefits for some workers (Ture 1976; Stein 1980).

It was quickly noted by others, however, that plan termination was not the only option available to employers who faced increased costs of defined-benefit pension plans as a result of ERISA. Although termination is surely an option, employers could also convert (partly or wholly) from a defined-benefit to a defined-contribution plan, thereby avoiding the insurance, reporting, and disclosure costs of maintaining a plan covered by ERISA (Denzau and Hardin 1983). Indeed, the movement from defined-benefit to defined-contribution plans--the so-called restructuring of pensions plans--has received increasing attention from pension practioners (see below).

From a social standpoint, it seems clear that the key variables of interest are the contributions made by employers to pension plans (whether defined-benefit or defined-contribution) and the benefits received by retirees. Plan restructuring should ultimately be reflected in these outcomes. Taking this view, it is fairly straightforward to show that the impact of ERISA on all employer contributions to pension plans is ambiguous in theory--ERISA's impact may be either positive or negative (Woodbury 1984). Accordingly, the impact of ERISA is really an empirical issue that must be settled by analysis of available data.

It is somewhat disturbing that there has been very little empirical research on the effects of ERISA--that is, little work that attempts to isolate the impact of ERISA apart from the many other forces that act to alter the employer-provision of pensions. Moreover, the research that does exist is highly mixed--some of it suggests that ERISA's impact on

pension contributions have been negative, others suggest small to nonexistent impacts, and still others suggest a positive impact of ERISA.

For example, an early study by Long and Scott (1982) suggested no effect of ERISA on pension contributions. But a later study (Woodbury 1984) found that ERISA may have been responsible for as much as a one-percentage-point increase in the share of compensation received as pensions in the years immediately following its enactment. This would translate into a nearly 25 percent increase in pension contributions as a result of ERISA. Yet another study (Sloan and Adamache 1986) concluded that ERISA significantly reduced the growth of pension contributions in the years following its enactment. It seems clear that high priority should be given to establishing more convincing evidence about whether and how ERISA has affected total employer contributions to pensions.

At least two other studies have examined the impact of ERISA on other outcomes. Cornwell, Dorsey, and Mehrzad (1989) find that ERISA has had no discernable effect on involuntary separations from firms--that is, firms are no more or less likely than before ERISA to renege on their promises to pay pension benefits by terminating workers. Ippolito (1988) presents evidence that ERISA has had virtually none of the effects that might be expected on wages or employment, and failed to induce underfunded plans to increase their funding levels. But he also finds that ERISA has slightly increased the rate of defined-benefit plan terminations, and has increased the likelihood that newly-created pensions plans would be defined-contribution plans.

Recently, much attention has been focused on the "restructuring" of pension plans--that is, on the movement away from defined-benefit and toward defined-contribution plans (Employee Benefits Research Institute 1989b). In recent years, restructuring has permitted many firms to recover the assets of defined-benefit pension plans that were actuarially overfunded, as well as to avoid the costs of compliance with ERISA by moving to a defined-contribution plan. Hence, corporate financial considerations (such as the availability of funds for investment and the attractiveness of a company as a takeover target) have come to dominate decisions about pension plan restructuring. It is clear, then, that competing interests have increasingly come into play regarding decisions about how to structure pensions. From the point of view of workers, the contributions made by employers to pension plans (whether defined-benefit or defined-contribution) and the benefits they receive in retirement are of paramount interest. But companies have other goals that may conflict with workers' interests. Policies that effectively balance these competing interests are difficult to make, given the paucity of knowledge about the impacts of current policy and of restructuring itself. Again, research on how current policy and restructuring activities have affected pension contributions and expected pension benefits is much needed.

B. Health-Care Cost Containment

Between 1982 and 1987, the cost of health insurance grew by 71 percent--more rapidly than any other component of consumption. During the same period, the cost of medical care generally increased by 35.6

percent, and the cost of all personal consumption items taken together grew by only 20.4 percent (U.S. Department of Commerce 1988, Table 7.10).

A complete discussion of the reasons for the rapid increase in the cost of health care generally--and of health insurance in particular--is well beyond the scope of this paper. Most observers attribute the increases to a constellation of factors acting simultaneously. On the supply side, they point to increasingly sophisticated technology and a market structure that is highly imperfect and lacking in competition. On the demand side, they point to infusions of funds from public sources--mainly Medicare in recent years--as well as private sources. With respect to the increasing cost of health insurance in particular, they have pointed to health providers' practice of shifting costs to private health-insurance carriers as Medicare and Medicaid reimbursements have become less generous. In effect, hospitals have covered the cost of providing health care to uninsured and underinsured patients by charging higher rates to patients who are covered by private health insurance.

Employers have tried to stem the inflation of health-insurance premiums in several ways (see, for example, Employee Benefits Research Institute 1989a). First, they have shifted the cost of health insurance and health care to their employees by various means: requiring workers to contribute to the monthly premiums paid by the employer, initiating or increasing the deductible paid by the worker before the insurance pays, or initiating or increasing the copayment (payment by the worker) for each service received. Second, employers have made increasing use

of so-called utilization review, under which the appropriateness of treatment is reviewed before treatment is administered. Utilization review includes precertification for length of stay in the hospital and second opinions before performance of surgery. Third, they have moved away from traditional fee-for-service health insurance and toward Health Maintenance Organizations (HMOs) and Preferred Provider Organizations (PPOs). Under HMOs, payments to health-care providers are based on a diagnosis or on a fixed package of services. Under PPOs, fee schedules are negotiated with a limited group of health-care providers, and utilization reviews occur in order to manage the cost of health-care provision.

There appears to be little research on how well the various strategies of health-care cost containment have worked, although the obvious judgement based on the recent record of dramatic increases in health-insurance premiums and health-care costs must be negative. As a result, it is not surprising that at least two of the country's largest employers--Ford Motor and Chrysler Corporation--have called for national health care financed by the federal government. Neither is it surprising that in discussions of health-care policy within the State of Michigan, the big three auto manufacturers have favored adoption by the State of policies that would remove the burden of paying for apparently ever-increasing health insurance costs, such as a comprehensive state-financed health insurance plan.

Charitably, one might say that health-care policy in the U.S. is currently in a state of flux. More realistically, one might say it is in turmoil. How or whether the debate will resolve itself seems a

matter of speculation. In two other sections of this paper, I argue that taxing employer contributions to health insurance as taxable income to workers would be a sensible approach to improvement of the health care system. It would be unrealistic to suppose that taxing health insurance would solve all the current problems facing the health-care sector--it would not address the problem of uninsured individuals or the apparently resulting problem of health-care providers shifting costs to privately insured patients. But in the context of a discussion of employee benefits, it would seem to be the appropriate suggestion. Other possible strategies, such as a system of comprehensive national health care, go well beyond the bounds of this discussion.

C. Health Insurance Benefits for Retirees

In addition to facing an ever-rising cost of health insurance for current employees, employers who extend health insurance to their retired workers face the problem of financing health insurance for those retirees. U.S. Department of Labor statistics indicate that over three-quarters of full-time workers who are covered by the health insurance plans of medium and large firms (private sector) have health insurance coverage after retirement (U.S. Department of Labor 1987, Table 29).

In general, employer-provided health insurance benefits for retired workers are the same as for current workers, although health insurance plans for retirees are usually integrated with Medicare. Integration with Medicare reduces the cost to employers of providing health insurance to retirees, but the existence of retiree health insurance in

the context of rising health insurance costs poses a potentially serious problem for firms nevertheless. Specifically, retiree health benefits have been financed by companies on a pay-as-you-go basis, which suggests that as the population ages, their existence will impose an increasing burden. A recent Employee Benefits Research Institute report estimates that the total unfunded liability of private employers for the future health insurance benefits of their workers (both current and retired) is $68.2 billion (Employee Benefits Research Institute 1988a, Table 12). The Financial Accounting Standards Board has drafted rules under which companies would be required to treat the cost of health insurance promised to retirees (that is, the present value of the health-insurance costs that workers will incur in retirement) as a liability in their balance sheets. It is expected that these rules will be finalized in 1990 (Employee Benefits Research Institute 1988a).

D. Regulation of Health Insurance: Section 89 and State Laws

An initially little-known part of the 1986 Tax Reform Act was Section 89 of the Internal Revenue Code. The purpose of Section 89 was to ensure that employee-benefit plans that receive tax-favored treatment--in particular health and life insurance--would not favor highly paid employees either in their coverage or generosity. Section 89 attempts to achieve this goal of nondiscrimination by setting out criteria that a benefit plan must meet in order to qualify for favorable tax treatment (see Employee Benefits Research Institute 1989c, pp. 16-17, for a synopsis). If a plan fails to meet these criteria, then

the dollar value of benefits provided to workers under the plan is treated as taxable income to the worker.

Although few question the intent of Section 89, both labor and business have attacked Section 89 as originally adopted. Labor's fear is that Section 89 is a first step toward taxing all employee benefits. Business's objections center on the costs associated with demonstrating compliance--according to many employers, the original Section 89 placed unreasonable record-keeping and data-collection burdens (Stout 1989; LaForce 1989). Indeed, at the time of writing, the Treasury Department has agreed, and the House Ways and Means Committee has moved to ease Section 89 so that criteria for compliance focus on whether a plan is designed to be nondiscriminatory, rather than on whether a plan as used is nondiscriminatory (Birnbaum 1989).

The effective date for Section 89, initially January 1, 1989, was delayed to July 1, 1989 even before the proposed easing of the rules. It now appears that a revised Section 89 will become effective October 1, 1989. What the actual effect of the modified Section 89 will be is an important but difficult topic for future research--difficult because accurate data on plan characteristics and availability are so scarce.

In addition to Section 89, many employers have faced an increasing number of state laws that mandate the provision of particular types of health insurance benefits (Stipp 1988). Further, both Hawaii and Massachusetts have both adopted legislation that effectively mandates the provision of a relatively comprehensive package of health insurance benefits to most workers (Goddeeris 1989). Readers are referred to one

of the other Commission reports (Mitchell 1989) for a full treatment of mandated benefits.

VII. Flexible Benefit Plans and New Employee Benefits

A. Flexible Benefit Plans

Traditionally, employers have offered all workers within a given classification a fixed package of benefits. Often these benefits have consisted of a certain number of paid holiday, vacation, and leave days, a pension plan, health insurance, and life insurance. Flexible benefit plans--often called "cafeteria" plans--differ from this traditional arrangement in that they allow workers to select from a menu of possible benefits those benefits that they most prefer (Employee Benefits Research Institute 1985, Chapter 28).

Two advantages have been attributed to flexible benefit plans. First, they may increase the value to some workers of the benefits that are provided by the employer in tax-favored form. Second, they may induce workers to become more aware of, and to gain a better understanding of, the benefits they receive.

To a researcher, perhaps the most striking aspect of flexible benefit plans is that they have been so frequently mentioned in the press and in practical discussions of employee benefits, but that there exists virtually no substantive research or analysis of their use or effects. There can be little doubt that lack of data on flexible benefit plans is an important reason for this gap in research on employee benefits.

Despite the lack of existing research, two points about flexible benefit plans can be made. First, it has been noted frequently that the existence of flexible benefit plans may lead to adverse selection--that is, to workers who are good risks (from the point of view of health insurance or life insurance, for example) opting out of a plan, leaving only bad risks. Models of adverse selection suggest that when good risks opt out of an insurance market, insurance premiums increase and ultimately the insurance market in question fails. The only way to mitigate adverse selection in the context of flexible benefit plans is to limit flexibility, for example, by placing insurance plans outside the basket of benefits among which workers may choose. But this thwarts the basic idea of the flexible benefit plan.

The second point has to do with flexible benefits in the context of public policy. A central problem in the concept of flexible benefit plans is that flexible benefits thwart the ability of policy makers to encourage provision and use of particular benefits. Instead, by designating a broad array of benefits as tax-favored, flexible benefit plans encourage provision and use of a rather arbitrary package of benefits. In short, the flexibility inherent in flexible benefit plans robs policy makers of the ability to direct resources toward particular benefits, directing them instead toward a grab-bag of activities and benefits.

There is likely to be disagreement about whether these two disadvantages of flexible plans outweigh their advantages. But to the extent that flexible benefit plans undermine the basic insurance principles of certain employee benefits, and erode the ability of public

policy makers to achieve desired goals, they would seem to be a deleterious innovation in employee benefits.

B. Dependent Care

The dramatic influx of women--and especially married women--into the labor force since World War II has led to increasing attention being given to "the interaction of work and the family" (Norwood 1988). In particular, the availability of child care (or more generally dependent care) has been an increasing concern in a labor market in which women with young children make up a substantial proportion of all workers.

At least four other Commission papers are devoted to one or another aspect of dependent care (Friedman 1989a, 1989b; Staines 1989; Rodgers and Rodgers 1989). Accordingly, it is necessary here only to point to some of the issues that are of special concern in the context of employee benefits. For example, Norwood (1988) has discussed the problems that the provision or child care and other nontraditional benefits raise for the measurement of total compensation. Hayghe (1988) reports the results of a recent Bureau of Labor Statistics special survey, which shows that only about 5 percent of all establishments with 10 or more employees provide direct child care benefits (that is, day care or financial assistance). Moreover, "only 2 percent of the 442,000 establishments that reported no child care benefits or flexible work-schedule policies said they were 'considering' doing something in the future" (Hayghe 1988, pp. 42-43). Finally, Robins (1988) provides a survey of the existing federal programs that support or encourage child care.

VIII. Implications for Public Policy

A multitude of public policy issues currently surround the tax treatment of employee benefits. In particular, the tax-favored status of employer contributions to pensions and health insurance has been blamed for numerous ills: a shrinking tax base that has exacerbated the federal budget deficit; an inefficient and bloated health-care sector, overinsurance by many recipients of employer-provided health insurance, and rising health-care costs; and a tax system that is made more regressive because those who receive tax-favored employee benefits tend to be in higher-income households than those who do not.

In addition to being held responsible for these perceived ills, the tax-favored status of employee benefits is implicitly blamed for failing to solve completely the problems one would expect it to address. Why do many workers still lack coverage by private pension or health insurance plans? Why, if tax-favored treatment of pension contributions is responsible for the growth of private pensions, is the rate of private saving in the U.S. nevertheless so low by international standards?

A. Some Options

Policies suggested to deal with these perceived problems have often addressed one problem without handling another. Two such proposals are taxing all employer contributions to pensions and health insurance, and requiring employers to provide some minimum level of health insurance to all employees--mandated health benefits. We discuss each in turn.

1. Taxing All Employee Benefit Contributions. The simulations suggest that the taxation of all employee benefits is too sweeping a policy change to implement in the foreseeable future--taxing all employer contributions would cut in half employer contributions to private pension plans. Perhaps the simplest implication of this finding is that a policy of taxing all employee benefits would be politically difficult to implement.

Even if it were not a politically difficult option, the simulations suggest that taxing all benefits would dramatically reduce retirement saving through the private pension system, and it is unclear that this would be desirable. First, the U.S. economy has a low rate of private saving by international standards, and a policy that would further reduce private saving would be counter to the goal of long-run economic growth. Second, taxing all benefits would, by cutting in half the size of private pension contributions, place on the public retirement system an increased long-run burden. If policy-makers wish to tax pension contributions, they must in turn be willing either to increase the size of the OASI system, or to see the income replacement rates of retirees fall substantially. Neither of these alternative seems desirable or easy to defend.

In short, because its effects of the private pension system appear to be so dramatic, the policy of taxing all employee benefits seems both politically infeasible and economically unwise.

2. Mandated Benefits. The idea of mandating health benefits has recently caught the attention of the public and many policy makers. A full treatment of mandated health benefits is beyond the scope of this

discussion, in view of the Commission report by Mitchell (1989) on this topic. Nevertheless, three points may be appropriate. First, discussions of mandated benefits often seem to imply that mandating would do away with the problem of uninsured individuals, when of course mandating would only do away with the problem of uninsured workers. In other words, some advocates of mandated health insurance have not clearly specified the nature of problem posed by the uninsured. Neither have they clearly delineated who would and who would not benefit from mandated benefits. It follows that the degree to which mandating would be an efficient way of solving the social problem posed by uninsured individuals is largely an unanswered question.

Second, the effects of mandated benefits on labor markets, especially low-wage labor markets, have yet to be examined in any systematic way. It seems likely that mandated benefits could have the same adverse effects on employment of low-wage workers as a large increase in the minimum wage, but the needed research on this question does not exist. Third, mandating health-care benefits could contribute to further increases in health-care costs, and further inefficient use of the health-care system. The reason is that, to the extent mandating is successful in extending health insurance to currently uninsured workers and households, it would increase use of the health-care system. In part, such an increase would be desirable, but (depending on the package of benefits mandated) it is also possible that further overuse of health services would result.

The case for mandating health-insurance benefits seems far from clear-cut at this time. Too little research, either theoretical or

empirical, has been conducted to offer a well-reasoned judgement. What is clear is that mandating benefits, like the favorable tax treatment of health insurance contributions, may create its own set of problems without providing a complete solution to tha problems it is intended to address.

B. A Proposal for Marginal Change

A relatively low cap on health-insurance contributions appears to be a sensible and efficiency-improving policy. A policy of taxing employer contributions to health insurance in excess of a relatively low amount ($1,125 annually, for example, as discussed above) has at least five points in its favor.

First, it partially addresses the problems of rising health-care costs, overuse of the health-care system, and an inefficiently large health-care sector. It does so by reducing the incentive for employers to provide compensation in the form of health insurance beyond a given level. As a result, the health insurance provided by employers would be more likely to be true insurance against large and unexpected health expenses, and less likely to be a simple tax subsidy to consumption of health-care services that are regular and predictable.

Second, a low tax cap on health insurance addresses the concern that the tax base will continue to be eroded as health-care costs rise, and as employer contributions to health insurance increase. Many predictions suggest that employer contributions to health insurance will continue to rise in real terms. By limiting the extent to which

employer contributions to health insurance are excluded from the tax base, erosion of the tax base is halted.

Third, a low tax cap on health insurance would not limit or reduce the access to basic health care by any currently insured or potentially insurable worker. It would likely reduce the degree to which workers who are currently overinsured consume health-care services. That is, it would tend to reduce the provision by employers of insurance that covers regular and predictable health care (Phelps 1984-85). But again, the low tax cap would be unlikely to reduce workers' coverage by employer-provided major medical insurance.

Fourth, in reducing the provision of health insurance for regular and predictable health care, the low tax cap would imply an improvement in the equity of the tax system. The simulations discussed above suggest strongly that a low tax cap on health-insurance contributions would have a favorable distributional impact. Because workers who have the highest total compensation tend to be covered by the most generous employer-provided health insurance, taxing health contributions over a specified maximum would be a progressive tax measure.

Fifth, a low tax cap on health insurance contributions would not foreclose the option of mandating health insurance benefits, should policy-makers choose to pursue mandating. If all health insurance contributions were taxed, it would be extremely awkward to mandate health-insurance coverage because the two policies would tend to work at cross purposes. Taxing benefits above the mandated level would not pose this problem, however. Essentially, a policy of mandating with taxation of benefits over a specified level could be viewed as a statement of

what level of health-insurance benefits is in the public interest. But again, the case for mandating health insurance is not clear-cut at present.

In short, a low tax cap on health insurance contributions would tend to alleviate each of the perceived problems outlined above without exacerbating other problems or foreclosing other policy options. Accordingly, the low tax cap seems a sensible and economically sound policy, the adoption of which should be urged.

Table 1

Non-Wage Labor Costs (NWLCs) as a Proportion of Total Labor Costs

by Type of Cost, U.S. Private Domestic Industries 1965-1985

Type of NWLC	National Income & Product Accounts		Chamber of Commerce	
	1966	1985	1965	1985
(a) Payments for time not worked	a	a	0.0762	0.0842
(b) Total social welfare costs	0.0961	0.1600	0.1026	0.1697
(c) Statutory social welfare costs	0.0493	0.0780	0.0448	0.0786
(d) Voluntary social welfare costs	0.0468	0.0820	0.0578	0.0911
(e) Benefits in-kind	a	a	0.0040	0.0015
(f) Other expenses of a social nature	a	a	0.0145	0.0163
(g) Vocational Training	a	a	0.0008	0.0021
(h) Total NWLCs	0.0961	0.1600	0.1981	0.2738

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, The National Income and Product Accounts of the United State, 1929-82: Statistical Tables (Washington, D.C.: USGPO, 1986); Survey of Current Business 66(July 1986); U.S. Chamber of Commerce, Employee Benefits, various years.

a. The U.S. National Income and Product Accounts do not report the following as separate cost items: payments for time not worked, in-kind benefits, other expenses of a social nature, and vocational training. Payments for time not worked and benefits in-kind are included as direct wage and salary payments. Other expenses of a social nature and vocational training appear to have no counterpart in the Accounts.

TABLE 2

Total Compensation in Current Dollars and

the Distribution of Compensation by Type,

1968-1986

Year	Total Compensation (current dollars)	Percentage of Total Compensation Paid as: Wages and Salaries	Legally Required Nonwages	Voluntary Nonwages	Average Annual Rate of Change in Percentage Paid as: Wages and Salaries	Legally Required Nonwages	Voluntary Nonwages
1968	416,430	90.1	5.0	4.9			
1969	459,252	89.9	5.1	5.1			
1970	485,346	89.5	5.0	5.5			
1971	514,323	89.0	5.1	5.9	-0.60 percent	3.1 percent	5.9 percent
1972	567,862	88.2	5.5	6.3			
1973	640,287	87.5	6.2	6.4			
1974	702,731	87.1	6.3	6.6			
1975	738,842	86.4	6.2	7.3			
1976	829,984	85.6	6.5	7.8			
1977	930,471	85.1	6.7	8.2	-0.44 percent	2.5 percent	3.1 percent
1978	1,060,682	84.8	6.9	8.2			
1979	1,200,078	84.7	7.1	8.2			
1980	1,315,139	84.5	7.0	8.5			
1981	1,451,580	84.5	7.2	8.3			
1982	1,521,944	84.1	7.2	8.7			
1983	1,609,958	84.0	7.4	8.6	-0.02 percent	1.6 percent	-1.2 percent
1984	1,775,291	84.1	7.7	8.2			
1985	1,899,965	84.3	7.7	7.9			
1986	2,006,269	84.4	7.7	7.9			

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Notes: All data are derived from the National Income and Product Accounts: U.S. Department of Commerce, Bureau of Economic Analysis, The National Income and Product Accounts of the United States, 1929-82, Washington, D.C., U.S.G.P.O., September 1986; Survey of Current Business 67 (July 1987), and unpublished two-digit industry detail underlying the published figures. The unpublished data were provided by the Bureau of Economic Analysis. Table references below are to the published sources.

Total Compensation is total expenditure of private domestic industries on employee compensation, excluding directors' fees. (Table 6.4B of the published data include directors' fees in Total Compensation.) Wages and Salaries are from Table 6.5B. Legally Required Nonwages are the sum of Employer Contributions for Social Insurance (Table 6.12) and privately administered Workers' Compensation (Table 6.13). Hence, Legally Required Nonwages include all private domestic contributions for Old Age, Survivors, Disability, and Hospital Insurance, Unemployment Insurance, Workers' Compensation, and Temporary Disability Insurance. Voluntary Nonwages are Other Labor Income (Table 6.13) less privately administered Workers' Compensation and directors' fees (Table 6.13). Hence, Voluntary Nonwages include all private domestic contributions for pensions, profit sharing, group health and life insurance, and supplemental unemployment benefits.

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Because Table 6.13 does not report Other Labor Income by type for private domestic industries, we have used unpublished data provided by the Bureau of Economic Analysis to compute Workers' Compensation contributions and directors' fees for domestic private industries.

Table 3

Non-Wage Labor Costs as a Proportion of Total Labor Costs by Industry, 1966, 1971, 1976, 1981, and 1985: U.S. National Income and Product Accounts Data

Industry	1966	1971	1976	1981	1985
All Private domestic	0.0961	0.1113	0.1444	0.1563	0.1600
Agriculture	0.0602	0.0744	0.1027	0.1338	0.1321
Mining	0.1229	0.1345	0.1618	0.1674	0.1713
Construction	0.0817	0.0907	0.1364	0.1590	0.1787
Manufacturing:					
Durable	0.1150	0.1391	0.1768	0.1890	0.1887
Nondurable	0.1092	0.1222	0.1577	0.1822	0.1830
Transportation	0.1016	0.1170	0.1644	0.1654	0.1862
Communications	0.1566	0.2064	0.2176	0.2214	0.2227
Utilities	0.1320	0.1500	0.2100	0.1998	0.2034
Trade:					
Wholesale	0.0763	0.0924	0.1176	0.1280	0.1359
Retail	0.0755	0.0872	0.1107	0.1231	0.1337
Finance and Insurance	0.1100	0.1240	0.1647	0.1593	0.1587
Services	0.0639	0.0775	0.1051	0.1205	0.1275

Table 4

Estimates of Fixed and Variable Labor Costs in the U.S

by Industry, 1966, 1971, 1976, 1981, and 1985:

U.S. National Income and Product Accounts Data

Industry	1966	1971	1976	1981	1985
Fixed Employee Benefits as percent of total labor cost:					
All Private domestic	6.01	6.54	8.90	9.28	9.59
Agriculture	2.99	2.88	4.96	5.47	5.57
Mining	8.82	8.97	11.35	10.99	10.96
Construction	3.94	3.84	7.40	8.63	10.28
Manufacturing:					
Durable	7.90	9.25	12.02	12.42	12.26
Nondurable	7.22	7.28	9.97	11.58	11.68
Transportation	5.22	6.16	9.22	8.66	9.89
Communications	12.53	17.03	17.21	16.93	16.73
Utilities	10.23	11.58	16.41	14.49	14.61
Trade:					
Wholesale	3.88	4.93	6.44	6.71	7.66
Retail	4.16	3.89	5.07	5.61	6.70
Finance and Insurance	8.14	8.84	12.29	10.99	10.80
Services	3.32	3.85	5.77	6.46	6.97

Table 5

Fixed/Variable Labor Cost Ratios and Skill Levels

in the U.S. by Industry, 1985:

U.S. National Income and Product Accounts Data

Industry	Fixed/Variable Cost Ratio	Rank	Skill Proxy	Rank
All private domestic	0.1061	--	3.82	--
Agriculture	0.0590	12	2.57	9
Mining	0.1231	5	12.09	3
Construction	0.1146	7	1.63	10
Manufacturing:				
Durable	0.1397	3	5.84	5
Nondurable	0.1317	4	8.58	4
Transportation	0.1097	8	5.82	8
Communications	0.2009	1	21.05	2
Utilities	0.1712	2	23.01	1
Trade:				
Wholesale	0.0830	9	2.63	8
Retail	0.0719	11	1.43	11
Finance and Insurance	0.1211	6	3.74	7
Services	0.0749	10	1.19	12

Notes: The skill proxy is constructed from national Income and Product Accounts data by dividing real capital consumption allowance by full-time equivalent employment. The Spearman rank correlation coefficient between the fixed/variable cost ratio and the skill proxy is 0.88.

Table 6

Inclusion of Workers in Employer-Provided Pension and Group Health Insurance Plans: Tabulations from the March 1988 Current Population Survey

Worker Characteristics	Percentage Included in Pension Plans	Percentage Included in Group Health Plan		Percentage Included in Both Pension and Health Plan
		Total	Employer Paid All	
All workers	42.9	59.9	24.1	37.5
Gender:				
Male	46.0	66.0	26.7	42.2
Female	39.3	52.5	20.9	31.9
Age:				
18-24	17.3	38.3	14.1	14.2
25-34	41.6	63.8	26.1	36.8
35-64	51.7	64.5	26.0	45.2
65 and over	22.5	40.3	17.4	18.0
Ethnicity:				
White Nonhispanic	43.9	61.0	25.4	38.5
Hispanic	31.9	49.6	17.6	27.2
Black	44.8	60.0	18.6	39.1
Other	44.0	58.0	22.6	36.3
Education:				
0-8 years	26.4	41.6	14.6	22.7
9-12 years	39.1	56.9	22.4	33.9
13 years and over	48.8	65.0	26.9	42.9
Union Coverage:				
Covered	68.7	70.2	26.3	55.6
Not Covered	42.8	59.8	24.1	37.4
Employment Status:				
Part-Time	16.3	23.8	9.3	10.4
Full-Time	48.5	67.4	27.2	43.2
Class of Workers:				
Self-Employed	7.2	18.6	9.7	4.4
Not Self-Employed	46.1	63.6	25.4	40.5
Annual Earnings:				
$1 - $10,000	13.1	24.9	8.9	8.5
$10,001 - $20,000	43.3	66.5	25.4	36.7
$20,001 - $30,000	62.5	79.9	33.0	56.5
$30,001 - $40,000	71.2	85.4	36.8	66.5
$40,001 - $50,000	72.0	84.6	36.5	67.0
$50,001 - $60,000	69.4	84.8	35.7	65.6
$60,000 and over	62.8	81.6	39.3	58.5

Table 6
(continued)

Worker Characteristics	Percentage Included in Pension Plans	Percentage Included in Group Health Plan		Percentage Included in Both Pension and Health Plan
		Total	Employer Paid All	
Industry:				
Agriculture	8.6	20.9	9.8	6.4
Mining/Construction	32.0	51.8	21.9	28.0
Durable Goods	59.2	81.3	35.0	55.5
Nondurable Goods	52.2	73.8	26.4	48.0
Transport, Communication, and Public Utilities	60.4	75.4	31.9	56.0
Wholesale Trade	39.6	68.7	30.6	35.3
Retail Trade	21.9	41.5	14.8	17.7
Finance, Insurance, and Real Estate	46.1	66.5	23.8	39.7
Business Services	23.1	46.7	19.5	19.6
Personal Services	11.7	28.3	10.9	9.4
Entertainment Services	22.9	43.1	19.4	20.2
Professional Services	51.6	61.8	26.7	42.7
Public Administration	81.3	80.0	26.3	71.3
Occupation:				
Managerial	52.1	72.4	30.6	46.6
Professional/Technical	59.8	71.7	29.7	52.2
Sales	28.0	49.9	19.4	23.8
Clerical	47.7	62.5	24.4	39.5
Craft	44.6	35.1	13.9	41.1
Operatives, except Transport	46.4	64.6	26.3	42.3
Transport Operatives	44.2	68.9	25.9	39.6
Laborers	32.6	63.7	26.9	28.9
Service and Other	23.0	51.0	19.0	19.1
Household Status:				
Householder with Relatives	51.0	70.5	27.9	46.9
Spouse of Householder	41.5	48.3	19.1	31.2
Other Relative of Householder	22.2	41.7	15.4	19.0
Nonfamily Householder or Unrelated Individual	41.4	65.1	28.8	38.1

Notes: Sample includes workers who were not in the military, were 18 years or older, and had positive earnings in 1987. There are 68,226 workers in the sample.

Table 7

Linear Probability Models of

Inclusion in Employer-Provided

Pension and Group Health Insurance Plans

Explanatory Variable	Dependent Variables: Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Intercept:	-0.043	0.163	0.085	-0.033
	(0.013)	(0.003)	(0.013)	(0.013)
Gender:				
Female	0.022	0.017	0.018	0.024
	(0.005)	(0.004)	(0.004)	(0.004)
Male	--	--	--	--
Age:				
18 - 24	--	--	--	--
25 - 34	0.063	0.070	0.037	0.060
	(0.006)	(0.006)	(0.006)	(0.006)
35 - 64	0.134	0.067	0.029	0.116
	(0.006)	(0.006)	(0.006)	(0.006)
65 and over	0.077	0.082	0.049	0.061
	(0.011)	(0.010)	(0.011)	(0.011)
Ethnicity:				
White Nonhispanic	--	--	--	--
Hispanic	-0.052	-0.062	-0.046	-0.053
	(0.006)	(0.006)	(0.006)	(0.006)
Black	0.019	-0.005	-0.059	0.014
	(0.006)	(0.006)	(0.006)	(0.006)
Other	-0.007	-0.031	-0.025	-0.028
	(0.009)	(0.009)	(0.009)	(0.009)

Table 7
(continued)

Explanatory Variable	Dependent Variables: Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Education:				
0-8 years	--	--	--	--
9-12 years	0.038 (0.008)	0.056 (0.007)	0.030 (0.008)	0.033 (0.008)
13 years and over	0.033 (0.008)	0.050 (0.008)	0.029 (0.008)	0.029 (0.008)
Union Coverage:				
Covered	0.115 (0.022)	-0.006 (0.022)	-0.015 (0.022)	0.058 (0.022)
Not Covered	--	--	--	--
Employment Status:				
Part-Time	-0.078 (0.005)	-0.158 (0.005)	-0.059 (0.005)	-0.082 (0.005)
Full-Time	--	--	--	--
Class of Worker:				
Self-Employed	-0.271 (0.006)	-0.335 (0.006)	-0.115 (0.006)	-0.252 (0.006)
Not Self-Employed	--	--	--	--
Annual Earnings:				
$1 - $10,000	--	--	--	--
$10,001 - $20,000	0.203 (0.005)	0.288 (0.004)	0.118 (0.005)	0.186 (0.004)
$20,001 - $30,000	0.363 (0.005)	0.379 (0.005)	0.178 (0.005)	0.348 (0.005)

Table 7
(continued)

Explanatory Variable	Dependent Variables: Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
$30,001 - $40,000	0.434 (0.007)	0.413 (0.007)	0.211 (0.007)	0.428 (0.007)
$40,001 - $50,000	0.448 (0.009)	0.406 (0.009)	0.209 (0.009)	0.438 (0.009)
$50,001 - $60,000	0.435 (0.012)	0.418 (0.012)	0.205 (0.012)	0.438 (0.012)
$60,000 and over	0.394 (0.011)	0.404 (0.011)	0.247 (0.011)	0.391 (0.011)
Industry:				
Agriculture	--	--	--	--
Mining/Construction	0.015 (0.012)	0.042 (0.012)	0.018 (0.012)	0.012 (0.012)
Durable Goods	0.188 (0.012)	0.232 (0.011)	0.109 (0.012)	0.198 (0.012)
Nondurable Goods	0.167 (0.012)	0.213 (0.012)	0.050 (0.012)	0.175 (0.012)
Transport, Communication, and Public Utilities	0.192 (0.012)	0.182 (0.012)	0.076 (0.012)	0.199 (0.012)
Wholesale Trade	0.069 (0.013)	0.174 (0.013)	0.086 (0.013)	0.071 (0.013)
Retail Trade	0.049 (0.011)	0.091 (0.011)	0.010 (0.011)	0.049 (0.011)
Finance, Insurance, and Real Estate	0.131 (0.012)	0.165 (0.012)	0.021 (0.012)	0.124 (0.012)

Table 7
(continued)

Explanatory Variable	Dependent Variables: Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Business Services	-0.020	0.065	0.023	-0.012
	(0.012)	(0.012)	(0.012)	(0.012)
Personal Services	-0.007	0.052	0.007	0.010
	(0.013)	(0.012)	(0.012)	(0.012)
Entertainment Services	0.037	0.092	0.047	0.046
	(0.018)	(0.017)	(0.018)	(0.018)
Professional Services	0.183	0.160	0.076	0.153
	(0.011)	(0.011)	(0.011)	(0.011)
Public Administration	0.3	0.213	0.016	0.340
	(0.0)	(0.012)	(0.012)	(0.012)
Occupation:				
Managerial	-0.007	0.052	0.015	-0.019
	(0.007)	(0.007)	(0.007)	(0.007)
Professional/Technical	0.054	0.063	0.001	0.038
	(0.007)	(0.006)	(0.007)	(0.007)
Sales	-0.037	0.012	-0.006	-0.045
	(0.007)	(0.007)	(0.007)	(0.007)
Clerical	0.057	0.076	0.020	0.033
	(0.006)	(0.006)	(0.006)	(0.006)
Craft	0.026	0.033	0.003	0.016
	(0.007)	(0.007)	(0.007)	(0.007)
Operatives, except Transport	0.027	0.061	0.007	0.016
	(0.008)	(0.008)	(0.008)	(0.008)
Transport Operatives	0.001	0.016	0.010	-0.017
	(0.010)	(0.009)	(0.009)	(0.009)
Laborers	0.040	0.031	0.003	0.027
	(0.010)	(0.009)	(0.010)	(0.010)
Service and Other	--	--	--	--

Table 7
(continued)

Explanatory Variable	Dependent Variables: Included in Pension Plan	Included in Group Health Plan	Included in Fully-Paid Group Health Plan	Included in Both Pension and Group Health Plans
Household Status:				
Householder with Relatives	0.020 (0.005)	-0.005 (0.005)	-0.040 (0.005)	0.011 (0.005)
Spouse of Householder	0.020 (0.005)	-0.126 (0.005)	-0.081 (0.005)	-0.046 (0.005)
Other Relative of Householder	-0.008 (0.006)	-0.064 (0.006)	-0.051 (0.006)	-0.020 (0.006)
Nonfamily Householder or Unrelated Individual	--	--	--	--
R-squared (adj)	0.303	0.340	0.088	0.290
MSE	0.171	0.159	0.167	0.166
F	725.5	857.4	160.5	680.2

Source: Ordinary least squares estimates from sample of workers who were not in military, were 18 years or older, and had positive earnings in 1987 in the March 1988 Current Population Survey.

Table 8

Summary of Effects of Policy Changes on Fringe Benefit Provision:
Average Percentage Changes Under Tax Systems Existing 1969-1982

PANEL A: TOTAL EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of 1986 Tax Reform on:			
Quantities	+9.4	+0.9	+10.4
Expenditures	+2.2	+0.8	+10.7
Compensation Shares	-0.3	-1.4	+7.7
Effects of Taxing Health Insurance Contributions on:			
Quantities	-1.7	-5.8	-22.3
Expenditures	-0.9	-6.0	+0.2
Compensation Shares	+0.2	-4.7	+2.2
Effects of Low Tax Cap on Health Insurance on:			
Quantities	-0.4	-2.6	-13.9
Expenditures	-0.2	-2.9	+0.3
Compensation Shares	+0.1	-1.8	+0.7
Effects of Taxing All Benefits on:			
Quantities	-0.8	-64.1	-27.9
Expenditures	+0.8	-51.7	-6.2
Compensation Shares	+3.0	-53.9	-2.4

PANEL B: SUBSTITUTION EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of 1986 Tax Reform on:			
Quantities	+1.6	-18.5	-6.1
Expenditures	-5.5	-19.2	-6.5
Compensation Shares	+0.7	-13.1	+0.7
Effects of Taxing Health Insurance Contributions on:			
Quantities	+1.0	+2.8	-16.9
Expenditures	+2.1	+3.1	+7.8
Compensation Shares	-0.2	-0.6	+4.6
Effects of Low Tax Cap on Health Insurance on:			
Quantities	+0.7	+1.6	-11.3
Expenditures	+1.1	+1.6	+4.1
Compensation Shares	-0.1	-0.4	+1.8
Effects of Taxing All Benefits on:			
Quantities	+4.3	-53.9	-18.2
Expenditures	+6.7	-36.9	+7.6
Compensation Shares	+2.4	-46.1	+2.4

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Table 8
(continued)

Notes: The figures show how replacing the tax systems in effect during 1969 through 1982 with the specified tax-policy changes would have changed compensation quantities, expenditures, and shares. Changes are shown in annual percentage terms, averaged over the 14 years. "Total effect" refers to the sum of the substitution, ordinary income, and extra income effects. The substitution effect isolates the impact of the changing tax-price of wages relative to pensions and health insurance.

Sources: Woodbury and Huang (1989).

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Table 9

Summary of Effects of Policy Changes on Fringe Benefit Provision:
Average Percentage Changes Under Tax Systems Existing 1969-1982

PANEL A: TOTAL EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of Taxing Health Insurance Contributions on:			
Quantities	-0.7	-4.3	-14.7
Expenditures	-0.6	-4.2	+0.4
Compensation Shares	+0.1	-3.7	+1.8
Effects of Low Tax Cap on Health Insurance on:			
Quantities	-0.1	-1.7	-8.7
Expenditures	-0.1	-1.8	+0.3
Compensation Shares	+0.0	-1.5	+0.4
Effects of Taxing All Benefits on:			
Quantities	-0.4	-48.8	-20.1
Expenditures	+0.7	-36.8	-4.4
Compensation Shares	+2.2	-39.3	-1.6

PANEL B: SUBSTITUTION EFFECTS

Policy	Wages	Pensions	Health Insurance
Effects of Taxing Health Insurance Contributions on:			
Quantities	+0.7	+0.1	-11.9
Expenditures	+0.8	+0.3	+4.0
Compensation Shares	-0.1	-1.5	+3.1
Effects of Low Tax Cap on Health Insurance on:			
Quantities	+0.4	+0.2	-7.4
Expenditures	+0.4	+0.3	+1.9
Compensation Shares	-0.0	-0.6	+1.0
Effects of Taxing All Benefits on:			
Quantities	+3.4	-38.7	-12.1
Expenditures	+4.9	-23.1	+6.4
Compensation Shares	+1.7	-33.8	+1.4

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Table 9
(continued)

Notes: The figures show how the specified tax-policy changes under the 1986 tax reform would change compensation quantities, expenditures, and shares. "Total effect" refers to the sum of the substitution, ordinary income, and extra income effects. The substitution effect isolates the impact of the changing tax-price of wages relative to pensions and health insurance.

Sources: Woodbury and Huang (1989).

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Table 10

Simulated Effects of Policy Changes on
Federal Personal Income Tax Revenues

Policy	Percentage Change in Revenue Under Tax Systems 1969 - 1982	Percentage Change in Revenue Under 1986 Tax Reform
1986 Tax Reform:		
Aggregate	-21.2	--
Low-Wage Industry	-21.9	--
Medium-Wage Industry	-19.8	--
High-Wage Industry	-22.8	--
Taxing Health Insurance Contributions:		
Aggregate	+8.9	+8.3
Low-Wage Industry	+6.9	+7.7
Medium-Wage Industry	+7.2	+6.8
High-Wage Industry	+12.8	+10.8
Low Tax Cap on Health Insurance:		
Aggregate	+2.0	+1.5
Low-Wage Industry	+0.0	+0.2
Medium-Wage Industry	+0.6	+0.6
High-Wage Industry	+5.3	+4.3
Taxing All Benefits:		
Aggregate	+19.0	+17.6
Low-Wage Industry	+13.1	+14.5
Medium-Wage Industry	+14.8	+13.9
High-Wage Industry	+29.9	+25.9

Notes: The "Aggregate" figures show average annual percentage changes in federal revenues from the personal income tax that are predicted under the specified policies. "Low-Wage Industry" estimates show how the tax bill of the average worker in low-wage industries would change, and similarly for the "Medium-Wage Industry" and "High-Wage Industry" estimates.

Source: Woodbury and Huang (1989).

Table 11

Effects of Policy Changes on Fringe Benefit Quantities,
by Industry Groups

PANEL A: AVERAGE PERCENTAGE CHANGES UNDER TAX SYSTEMS EXISTING 1969 - 1982

Policy/Industry	Wages	Pensions	Health Insurance
1986 Tax Reform:			
Aggregate	+9.4	+0.9	+10.4
Low-Wage Industries	+5.0	+1.9	+8.2
Medium-Wage Industries	+8.9	+0.5	+11.3
High-Wage Industries	+13.5	+0.7	+10.4
Taxing Health Insurance Contributions:			
Aggregate	-1.7	-5.8	-22.3
Low-Wage Industries	-0.7	-1.9	-20.0
Medium-Wage Industries	-1.5	-6.0	-19.9
High-Wage Industries	-2.9	-5.6	-26.2
Low Tax Cap on Health Insurance:			
Aggregate	-0.4	-2.6	-13.9
Low-Wage Industries	-1.0	-11.5	-11.5
Medium-Wage Industries	-0.7	-5.5	-13.2
High-Wage Industries	-2.1	-14.8	-28.1
Taxing All Benefits:			
Aggregate	-0.8	-64.1	-27.9
Low-Wage Industries	+0.8	-81.1	-19.8
Medium-Wage Industries	-0.2	-70.2	-24.9
High-Wage Industries	-3.0	-57.2	-32.7

PANEL B: PERCENTAGE CHANGES UNDER 1986 TAX REFORM

Policy/Industry	Wages	Pensions	Health Insurance
Taxing Health Insurance Contributions:			
Aggregate	-0.7	-4.3	-17.3
Low-Wage Industries	-0.4	-5.9	-12.8
Medium-Wage Industries	-0.5	-4.7	-13.9
High-Wage Industries	-1.1	-3.7	-15.9
Low Tax Cap on Health Insurance:			
Aggregate	-0.1	-1.7	-8.7
Low-Wage Industries	-0.0	-0.5	-1.7
Medium-Wage Industries	-0.0	-0.9	-5.1
High-Wage Industries	-0.3	-2.5	-13.5
Taxing All Benefits:			
Aggregate	-0.4	-48.8	-20.1
Low-Wage Industries	-0.9	-68.4	-15.9
Medium-Wage Industries	-0.7	-52.3	-16.7
High-Wage Industries	-2.8	-42.9	-23.9

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Table 11
(continued)

Notes: The figures show how the specified tax-policy changes would alter compensation quantities. Panel A show changes under the tax systems in effect during 1969-1982. Panel B shows changes under the current tax system. All changes are total effects (sum of substitution, ordinary income, and extra income effects) in annual percentage terms.

Sources: Woodbury and Huang (1989).

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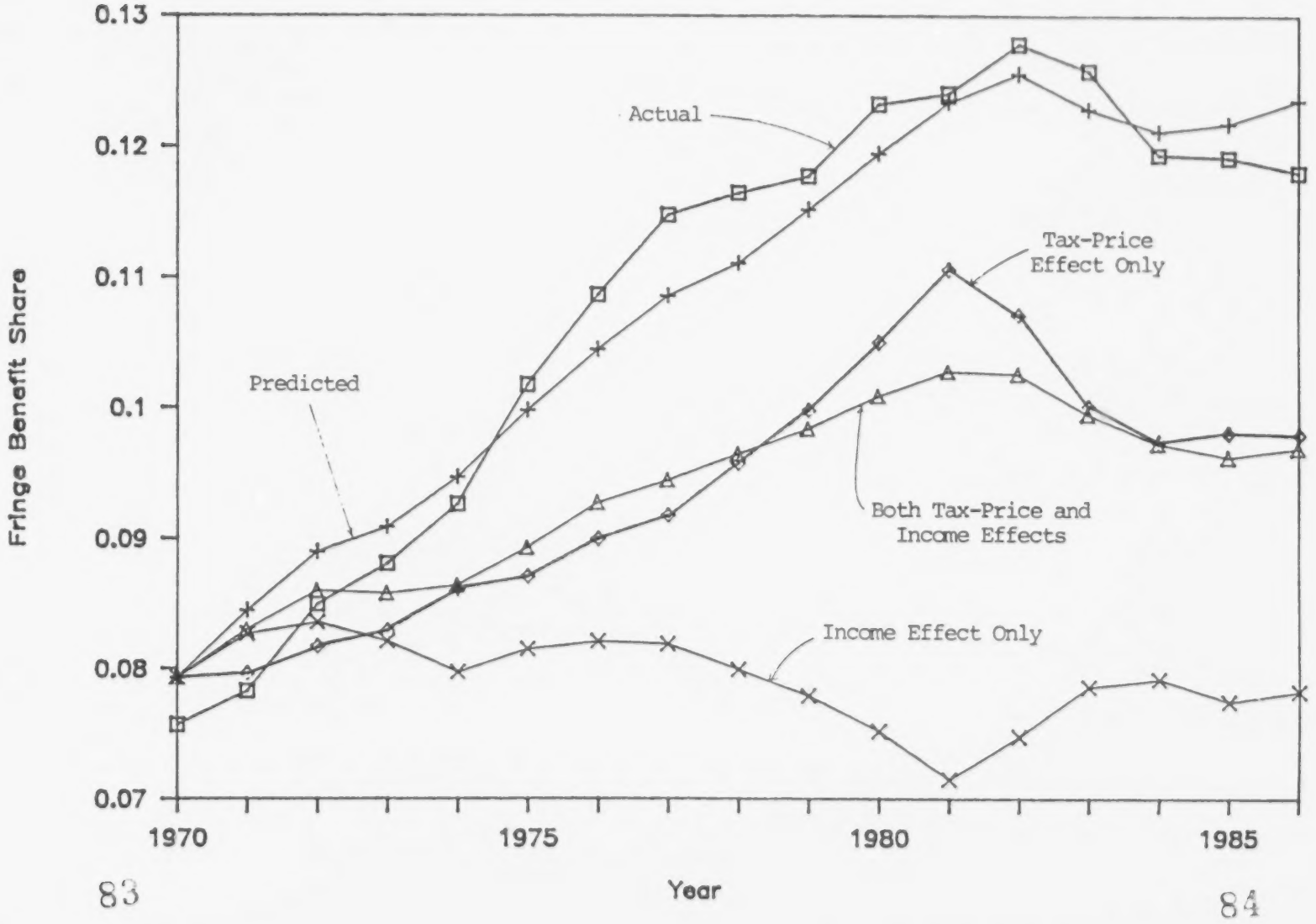
Figure 1

Actual, Predicted, and Simulated Fringe Benefit Shares, 1969-1986



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NOTES

1. It is important to distinguish between tax-exempt benefits and tax-deferred benefits. Health insurance is an example of a tax-exempt benefit--health insurance contributions are not treated as taxable income under the federal personal income tax. Pension contributions are an example of a tax-deferred benefit--although pension contributions are not treated as taxable income at the time they are made, pension benefits are taxed when the employee receives them in retirement. See, for example, Korczyk 1984.

2. The following discussion draws on Hart, Bell, Frees, Kawasaki, and Woodbury, 1988.

3. In preparing the figures in Table 1, the reclassification of U.S. NWLCs by the European Communities method, as presented in Table A2.6 of Hart (1984), has been followed closely. Since Hart's Table A2.6 is written with specific reference to the Chamber of Commerce Data, no special comment is required regarding the Chamber of Commerce Figures shown in Table 1. However, use of the National Income and Product Accounts data required some minor reclassification that should be mentioned. For the Accounts data, Statutory Social Welfare Costs equal Employer Contributions for Social Insurance (from Accounts Table 6.12) plus Worker's Compensation (Accounts Table 6.13). Voluntary Social Welfare Costs equal Other Labor Income of Private Domestic Industries minus Workers' Compensation (Accounts Table 6.13). Note that because

Social Welfare Costs are the only NWLCs enumerated in the Accounts, Total social welfare costs (row b) and Total NWLCs (row h) are the same for the Accounts.

4. Detailed definitions of each category are given in the table notes.

5. These figures are derived for each of the one-digit industries reported in the U.S. National Income and Product Accounts in five selected years spanning the mid-1960s through 1985. The figures displayed are based on methods developed in Hart (1984, Table 2.8, p. 17) and are conceptually similar to Hart's "Fixed NWLC I" and "Ratio I (fixed/variable)" measures in that they exclude pay for time not worked, and hence implicitly treat pay for time not worked as a variable cost. Specifically, the figures take fixed NWLCs to be employer contributions to state Unemployment Insurance, Supplemental Unemployment Insurance Benefits, Pensions, Health Insurance, and Life Insurance. In terms of the Accounts, then, fixed NWLCs are Unemployment Insurance plus Other Labor Income minus Workers' Compensation. Variable NWLCs, on the other hand, are Employer Contributions to Social Security (OASDHI) and Workers' Compensation. Again in terms of the Accounts, variable NWLCs are Social Insurance contributions (excluding Unemployment Insurance) plus Workers' Compensation. Because the Accounts do not enumerate each required item by industry, it was necessary to impute Unemployment Insurance and Workers' Compensation by industry. This was accomplished by using industry-level data from the Chamber of Commerce. Specifically, the ratio of UI contributions to the sum of UI and Social

Security contributions was computed by industry in the Chamber of Commerce data, and the ratio applied to the Accounts figure for Contributions for Social Insurance, in order to obtain an estimate of UI contributions by industry. Also, a similar ratio was constructed for Workers' Compensation contributions and applied to the Accounts data in order to obtain an estimate of Workers' Compensation contributions by industry.

6. Unions may nevertheless influence employee benefit provision by negotiating new kinds of benefits that are later adopted in the nonunion sector. Indeed, this is clearly the role unions have played historically, as with pensions.

7. An exception is the paper by Turner (1987).

8. Another factor that may have contributed to the peaking of the employee benefit share in 1982 is the boom in the stock market that took place in the mid-1980s. Since the value of pension funds increased with the increase in stock prices, it was possible for employers to make smaller incremental contributions to pension funds to cover their pension liabilities (Munnell 1987). The model discussed here does not include a variable capturing the influence of the stock market on pension contributions, but we consider this an important topic for future research.

9. It should be noted that a variety of trends--such as health-care cost management and benefit redesign (including the movement to defined-contribution pension plans)--should be viewed as manifestations of the slowing growth of employee benefits, rather than as causes of that slowing growth.

10. Similar arguments have been made about employer-provided pensions (Munnell 1984, 1985, 1988). It has usually gone unmentioned that lump-sum taxes are at best difficult to implement, and that efficient government provision of health care services (as of any good or service) entails myriad organizational problems.

11. Taylor and Wilensky (1983), Phelps (1984-85), and Adamache and Sloan (1985) offer estimates of the revenue effects of taxing health benefits; however, because they consider only tradeoffs between health benefits and wages, these studies are open to the criticism that they overstate the revenue gains of taxing health contributions.

Appendix A.

Employee-Benefit Data Problems

Tracking employee benefits in the U.S. poses a severe problem because government efforts to maintain suitable statistics have been sporadic. The National Income and Product Accounts are a good source of data on employer contributions to both legally mandated and voluntary social welfare programs, but the Accounts suffer from omission of other types of nonwage labor costs. Specifically, the Accounts subsume payments for days not worked and in-kind benefits under direct wage and salary payments. Also, the Accounts have no counterpart to various other expenses of a social nature or to vocational training. These deficiencies are augmented by a reluctance of the Bureau of Economic Analysis of the U.S. Department of Commerce to publish detailed data. For example, although the Bureau of Economic Analysis publishes a series on Employer Contribution to Social Insurance (Table 6.12) by one-digit industry, it does not disaggregate these contributions into their components--chiefly contributions to social security (OASDHI) and unemployment insurance. Similarly, although the Bureau of Economic Analysis does disaggregate Other Labor Income--composed mainly of contributions to pensions, health insurance, life insurance, workers' compensation, and supplemental unemployment insurance--into its components on an economy-wide basis, it does not publish disaggregations by industry. Although it is possible to adjust the Accounts' data using other data sources in order to partially overcome these aggregation

problems, the usefulness of the Accounts remains limited for many research efforts.

It is worth noting that the Bureau of Labor Statistics of the U.S. Department of Labor gathered excellent data on employee benefits for about a decade. It is unfortunate that the Survey of Employer Expenditures for Employer Compensation was gathered only from 1966 through 1977. Since 1977, the Bureau of Labor Statistics has gathered data for the Employment Cost Index, but these data are published in a way that makes them extremely awkward to use. Moreover, as Ehrenberg (1987) has noted, the micro data underlying Employment Cost Index figures have not been made available to researchers.

Because of the lack of current government statistics on employee benefits, the private U.S. Chamber of Commerce has gathered data on benefits since the late-1940s. The Chamber of Commerce data have the advantage that they are the only available source of data for several types of benefits, such as payments for days not worked, in-kind benefits, other expenses of a social nature, and vocational training. However, they have the disadvantage that they are taken from a self-reported survey of a self-selected sample of employers. As a result, they pose four problems. First, the composition of the sample has changed over time, and year-to-year changes that are observed may be sensitive to that changing composition. Second, in any given year, the figures shown in the Chamber of Commerce survey seem not to represent average labor costs of U.S. employers, again because of self-selection in response (see Hart and others 1988). Third, cross-sectional comparisons of industries or groups of workers may be distorted by which

employers in each industry choose to respond to the survey. Finally, self-reporting could give rise to various biases that can only be guessed at. All of these problems suggest that the Chamber of Commerce survey could give a biased picture of employee benefits in the U.S.

Various ways of benchmarking the Chamber of Commerce data so as to overcome the sampling bias that exists in the data have been explored. Unfortunately, these attempts have not been successful to date. The basic strategy of benchmarking would be to find elements of the Chamber of Commerce data that are shared with scientifically-sampled surveys such as the National Income and Product Accounts and the Survey of Employer Expenditures for Employee Compensation (the survey that ended in 1977). By comparing the components of compensation that are reported in both the Chamber of Commerce and the scientifically-sampled surveys, it should in principle be possible to adjust the components of compensation that are uniquely available in the Chamber of Commerce survey. Attempts to do just this have been unsuccessful for two reasons. First, the Chamber of Commerce data and the National Income and Product Accounts overlap only in two series--legally mandated and voluntary contributions to social welfare programs. In one of these series--legally mandated contributions--the two data sources are in reasonable accord (see Table 1, row c). In the other--voluntary social welfare costs--they diverge in some years by over 25 percent (see Table 1, row d). How similar or divergent other series would be is a matter of speculation; hence, it would be unwise to adjust all Chamber of Commerce figures downward by some fixed percentage. Second, use of the Survey of Employer Expenditures for Employer Compensation as a benchmark

has been stymied because that survey, contrary to the belief of many researchers, appears not to be representative of the population of all firms in the U.S. The Employment Cost Index still needs to be fully explored as a possible benchmark for the Chamber of Commerce data, but this task, too, cannot be completed until the Bureau of Labor Statistics makes available the employer data underlying the Employment Cost Index.

Appendix B.

Studies of the Tax Treatment of Employee Benefits: A Review

Through 1987, there had appeared numerous studies of the influence of the favorable tax treatment of benefits on benefit levels or on the mix of total compensation. These include Alpert (1983), Atrostic (1983), Holmer (1984), Leibowitz (1983), Long and Scott (1982), Sloan and Adamache (1986), Taylor and Wilensky (1983), Turner (1987), Vroman and Anderson (1984), and Woodbury (1983). Some additional studies (Goldstein and Pauly 1976; Mumy and Manson 1985) attempted to draw inferences about the effects of taxes on benefits, but did so without including explicit tax measures.

The studies that included explicit tax measures took essentially one of two empirical approaches. The first was to regress (for an individual or a group) a measure of the level of employer contributions to all employee benefits (FB), or pension benefits (PB), or health insurance benefits (HB) on a measure of the marginal tax rate facing the group (or individual) and a vector of control variables:

(1) $FB = a_0 + a_1 t + a_2 x_2 + \ldots + a_m x_m + e_1$

(2) $PB = b_0 + b_1 t + b_2 x_2 + \ldots + b_m x_m + e_2$

(3) $HB = c_0 + c_1 t + c_2 x_2 + \ldots + c_m x_m + e_3,$

where t is the marginal tax rate facing the group or individual, the x_i represent (m - 1) control variables, the a_i, b_i, and c_i are coefficients, and the e_i are normally distributed error terms. This procedure or some variant of it was followed by Atrostic (1983),

Leibowitz (1983), Sloan and Adamache (1986), Taylor and Wilensky (1983), and Vroman and Anderson (1984).

The alternative approach was to use as a dependent variable in equations like (1), (2), and (3) not the level of benefits per worker, but the share of total compensation received by workers as employee benefits, pension benefits, or contributions to health insurance. Usually these shares have been specified as:

(4) $FB/TC = FB/(FB + WS)$

(5) $PB/TC = PB/(PB + WS)$

(6) $HB/TC = HB/(HB + WS)$,

where TC refers to total compensation per worker, and WS are wage and salary payments per worker. This approach or some variant of it was taken by Alpert (1983), Long and Scott (1982), Sloan and Adamache (1986), Turner (1987), and Woodbury (1983). One possible advantage of this latter approach was that it could be shown to have an explicit link to well-known consumer theoretic models (Woodbury 1983).

These two approaches and the studies based on them shared an important weakness that needed to be corrected: Essentially, none considered that the costs of providing benefits differ across benefits, over time, by size of firm, and by region. The effect of this deficiency was that none of these studies was able to estimate a tradeoff between any pair of employee benefits (for example, between pensions and health insurance). Among other things, this meant that none of the above studies was of use in estimating the effect of a change in tax policy that would be specific to just one benefit (a tax cap on health insurance contributions, for example) on the amount of

some other benefit provided by the employer.[11] Neither would any of the early studies be of use in determining whether the impact of taxing both pensions and health insurance would have a different impact on the provision of pensions than on the provision of health insurance.

The same deficiency implies that the early studies may have obtained biased estimates of tax effects on employee benefits as a whole (or on a single specific benefit). In effect, the early studies made untenable simplifying assumptions about the rate at which the employer is willing to trade health for pension benefits. This creates an omitted variables bias that could, in principle, lead to mistaken inferences about the relation between taxes and employee benefits.

Another deficiency shared by most of the early studies is that they had difficulty separating income effects from tax (or price-substitution) effects on the provision of nonwage benefits. In some studies, income effects were ignored, and in most studies where they were distinguished, collinearity between income and marginal tax rates frustrated the effort. The reason for the difficulty is that incomes and marginal tax rates tend to change together over time; even in cross-section there is a close relation between the income and marginal tax rates faced by a household. This close relation poses problems for econometric estimation. The work by Woodbury and Huang (1988, 1989), which is relied upon in the main text, represents an attempt to overcome some of the problems encountered in the earlier studies.

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